

Republic of Indonesia
Directorate General of Highways,
Ministry of Public Works and Housing

**TECHNICAL ASSISTANCE ON
ENVIRONMENTAL SOCIAL
CONSIDERATIONS FOR PATIMBAN
ACCESS TOLL ROAD DEVELOPMENT
IN THE REPUBLIC OF INDONESIA**

FINAL REPORT

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Japan International Cooperation Agency

IDEA Consultants, Inc.

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Executive Summary

Chapter 1. Overview of the Technical Assistance

Objectives of the Technical Assistance on Environmental Social Considerations for Patimban Access Toll Road Development (hereinafter referred to as “The Technical Assistance”) is to contribute to logistics improvement in Jakarta Metropolitan Area and business environment improvement as a result of speedy development and smooth implementation of the Patimban Access Toll Road Project (hereinafter referred to as “the Project”) by means of 1) supporting develop or update land acquisition plan and involuntary resettlement action plan (Land Acquisition and Resettlement Action Plan: LARAP) for the Project, and advising to implementation of the plans smoothly; 2) analyzing the gap of environmental assessment requirements between the Indonesian regulations and JICA Guidelines,¹ and advising the executing agencies in complying with JICA Guidelines.

The related agencies and executing agencies for the Service are shown as below:

- 1) The executing agency for the Patimban Access Toll Road Project: Directorate General of Highways (DGH), Ministry of Public Works and Housing (Direktorat Jenderal Bina Marga, Kementerian Pekerjaan Umum dan Perumahan Rakyat: PUPR)
- 2) The responsible agency for road by Public Private Partnership (PPP): Indonesia Toll Road Authority, Ministry of Public Works and Housing (Badan Pengatur Jalan Tol: BPJT)
- 3) The executing agency for Patimban Port Development Project: Directorate General of Sea Transportation (DGST), Ministry of Transportation

Chapter 2. Review of the Project Background and the Necessity

Patimban Port has started its operation in December 2020 parallely with the construction works started in 2018. To secure the transportation of the port cargo, a port access road with the length of 8.1 km has also been constructed and started its operation connecting with the National Road No.1 known as ‘Pantura line’. However, considering the congestion on the National Road No.1, it was deemed necessary to develop a new toll road which connects the port access road directly with the existing toll road network without interrupting the traffic on the National Road No.1.²

Patimban Access Toll Road (hereinafter referred to as "the Project") was planned by the Government of Indonesia as the new toll road which connects the port access road with the Cikopo-Palimanan (Cipali) Toll Road, and it has been listed as a National Strategic Project in the Presidential Regulation No.109/2020. The feasibility study of the Project was conducted in 2018³ and 2020⁴. In 2021, the Government of Indonesia expressed its intention to construct a part of the section of the toll road with the financial support by the Japanese ODA loan as a public project while it was expected that the project would be implemented as a BOT, public-private partnership (PPP) project in principle.

For obtaining the environmental permit, the process of Environmental Impact Analysis (Analisis Mengenai Dampak Lingkungan Hidup: AMDAL) has been initiated in 2020 in conformity with the regulations in Indonesia, and the Reference Framework of Environmental Impact Analysis (Kerangka Acuan Analisis Dampak Lingkungan Hidup: KA-ANDAL), which corresponds to a scoping

¹ JICA Guidelines for Environmental and Social Considerations, January 2022

² Final Report for the Preparatory Survey on Patimban Port Development Project in the Republic of Indonesia, JICA, 2017

³ Studi Kelayakan dan Basic Design Jalan Tol Akses Patimban, 2018

⁴ Reviews and Improvements of Feasibility Study and Basic Design Patimban Access Toll Road, 2020

report for the Environmental Impact Assessment (EIA), has already been approved in March 2021. For land acquisition, a land acquisition planning document (Dokumen Perencanaan Pengadaan Tanah: DPPT) was prepared in 2020, and the governor of the province issued a location determination (penetapan lokasi: penlok) for the ROW of the planned toll road with the area of ±340.116 ha in December 2021⁵ which officially announced the land acquisition within the area.

Under the circumstances described above, the technical adequacy of the existing feasibility study was examined by the Indonesian side through the consulting service for the construction of Patimban Port in order to formulate the project as an ODA loan project. However, it was still necessary to support the appropriate environmental and social considerations in accordance with JICA Guidelines. “Technical Assistance on Environmental Social Considerations for Patimban Access Toll Road Development” aims to support preparing AMDAL and Land Acquisition and Resettlement Action Plan (LARAP) for the Project so that the executing agency of the Project can comply with JICA Guidelines.

Chapter 3. Advice on Alternative Analysis

Alternative analysis is required by JICA Guidelines in the early stage of the planning. In the pre-feasibility study⁶, three alternative route plans were compared through multi-criteria comparison analysis, and the plan connecting Cikopo-Palimanan toll road at Cipeundeuy Sub-district with the end of the access road to Patimban port, which is the same route as the present route plan, was selected as the optimal plan. Further, the three route plans were examined again as a part of the feasibility study review by the consulting service team for Patimban Port, and the present route plan was recommended again due to the constructability, synergy effect with surrounding projects, and appropriateness of arrangement of junctions.

Considering the existing results above, the three route plans were compared and re-evaluated again by the Technical Assistance. The re-evaluation was made using quantitative information as much as possible at five aspects: 1) technical aspect, 2) current land use, 3) accessibility, 4) environmental aspect, and 5) social aspect. As the result of the comparison, the present route plan was evaluated to have fair length and simpler structures, advantage in minimal social and environmental impacts, and better accessibility to neighbor development plan comparing with the other two alternatives. Especially, the selected route was identified it could minimize potential social impact as it required smallest settlement relocation. It also has easier accessibility to industrial and economical area, which might bring economical synergy effect. Considering those results, the selected route plan was deemed to be reasonable comparing with the other two alternatives.

Chapter 4. Advice on Reviews of Natural Condition Survey

As a part of the feasibility study review by the consulting service team for Patimban Port, surveys for natural conditions including topographic and geotechnical surveys have been conducted to reflect the results on designing and construction planning. Necessary considerations related to the surveys were 1) selection of less environmental and social impact for borrowing pits and soil transportation, and 2) impact assessment and mitigation of land subsidence due to embankment. The Technical Assistance confirmed that countermeasures were discussed and being addressed in the design and plan properly.

Chapter 5. Advice on Environmental and Social Considerations (EIA/AMDAL)

⁵ Gubernur Jawa Barat Keputusan Gubernur Jawa Barat Nomor:593/Kep.848-Pemotda/2021 tentang Penetapan Lokasi Pengadaan Tanah untuk Pembangunan Jalan Tol Akses Patimban di Kabupaten Subang

⁶ Pre-Feasibility Study and Initial Design of The Patimban Port Access Toll Road, 2017

The gap analysis identified the differences between Indonesian regulations and JICA Guidelines on EIA/AMDAL as follows: 1) AMDAL reports developed based on the laws and regulations in Indonesia is generally poor in investigation and lack of data on social considerations, for example, several parts of requirement of JICA Guidelines such as gender consideration, social organizations, and conflict of interest are out of the scope, and 2) only one public consultation held during scoping phase, and not in drafting final report phase and implementation phase of environment and social consideration as required in JICA Guidelines. Considering the differences, the Technical Assistance supported the social considerations to be surveyed and included in the EIA/AMDAL report and the second public consultation to be held in drafting final report phase. The consultation meetings were held at two places around the project site on the 15th of February 2022.

The results of the EIA are overviewed as follows. As the monitoring plan, surveys in every six months were specified in the EIA/AMDAL report: surveys of air quality, noise, water quality of surface water and groundwater, vibration, aquatic biota during construction phase, and air quality, water quality, and noise during operation phase. Environmental management and monitoring will be implemented by the construction contractors during construction phase and by the toll road operator during operation phase under the responsibility of DGH, the project executing agency.

Pollution control:

During the construction phase, dust generation, contamination of water, waste, noise and vibration generation were expected due to operation of construction machines and vehicles, earth works, and basecamp operation. As the mitigation measures, sprinkling water, installation of sediment traps and septic tanks, waste disposal by a licensed company, limiting speed of vehicles etc. were planned and placed in the EIA/AMDAL report. For the operation phase, air pollution in case of traffic congestion, water pollution caused by storm water runoff and drainage from the toll road facilities and rest areas, domestic waste generation, noise and vibration from vehicles were expected. They were planned to be mitigated by planting trees and grasses along the road, development of appropriate drainage networks, installation of septic tanks, waste disposal by a licensed company, and so on.

Natural environment:

The project area is mostly agricultural land, and no protective habitats are identified. Mozambique tilapia (*Oreochromis mossambicus*) and carp (*Cyprinus carpio*) which are classified as VU (Vulnerable) by IUCN Red List has been reported at the surrounding river, and bar-winged prinia (*Prinia familiaris*) classified as NT (Near Threatened) was found in the terrestrial area. However, both fish species are alien species and the bird has broad habitats. Therefore, negative impacts on those species were not expected due to the Project. Amount of soil erosion was expected to be increased due to embankment and cutting works. Measures were requested to minimize the erosion such as by limiting the land clearance within ROW and compaction with standard technical specifications, etc.

Social condition:

The land acquisition will affect 1433 landowners, 388 tenants, and 823 workers. Out of them, 484 households (1553 persons) need house relocation. In addition to the compensation according to LARAP, recruitment of local people for the Project and support for livelihood restoration were identified to be required. Since the toll road crosses existing infrastructure such as roads and irrigation canals, the functions were to be secured by constructing underpass, bridge, etc. For preventing infectious diseases and securing labor environment, EHS lecture and management plan were requested to be prepared. Any minority group to be considered in JICA Guidelines and cultural heritage sites were not identified. Impacts on local social institution, misdistribution of benefit and damage, local conflict of interests, impacts on right of children were not identified. For gender consideration, equal job opportunities to men and women were stipulated in the EIA/AMDAL report.

Chapter 6. Advice on Preparation of Land Acquisition and Resettlement Action Plan (LARAP)

Under the Indonesian laws and regulations, the amount of compensation for loss of land and assets is equivalent to the replacement cost required by JICA Guidelines. However, the followings are not specified in the laws and regulations. Considering the gaps, the Technical Assistance supported DGH to ensure the compensation and support required by JICA Guidelines were included in the LARAP to be provided.

- 1) Compensation for workers/employees who do not directly possess rights for the lands and/or structures,
- 2) Compensation for affected persons without legal rights for using the land (illegal occupants),
- 3) Provision of livelihood restoration assistance,
- 4) Consideration of socially vulnerable affected persons (women-headed household, elderly, persons with low income).

The LARAP was prepared based on the census survey implemented in October 2021 to January 2022. According to the report, the number of people affected by the land acquisition for the Project was 2,570 households, or approximately 9,400 people, of which 484 households, or 1,553 people, would need to relocate their houses. The breakdown is shown in Table-1, and the LARAP covered all these households for compensation and assistance. 823 households were identified as worker/employee households, and 12 households were identified as illegal occupants. The number of households classified as socially vulnerable was 634 (Table-2), and they were planned to be considered in livelihood restoration assistance.

Table-1 Number of Affected Persons

		Number of affected households		Number of affected persons including household members
			Total	
Landowner	Individual	1359	1359	4594
Tenant	Legal land user	332	388	1940
	Illegal occupant	12		
	Unknown (Not surveyed)	44		
Worker	Agricultural worker	782	823	2851
	Shop worker	8		
	Unknown (Not surveyed)	33		
Total		2570		9418+
Need relocation of houses		484		1553
Need relocation of shops/business places	Landowner	37		118
	Tenant	37		143

+: number of household member is unknown

Source: Draft LARAP, February 2022

Table -2 Number of Vulnerable Affected Persons

	Landowner	Tenant	Worker	Total
Persons over 60 years old	228	43	69	340
Widow	83	19	6	108
Household heads with income below IDR 1,000,000 per month	163	4	8	175
Persons with special needs (persons with disabilities)	6	5	0	11
Total vulnerable persons	480	71	83	634

Source: Draft LARAP, February 2022

The grievance handling mechanisms in the LARAP were prepared and described separately for land acquisition and construction. The grievance mechanism for the Project will be handled by the Land Acquisition Implementation Committee, which will be established in accordance with the law for land acquisition, and by DGH Regional Office (Balai), which will be established in the DGH for construction. In either case, a grievance will be filed by completing the "Grievance Collection Form" and submitting it in writing to the Land Acquisition Working Unit or Balai in DGH. The Working Unit and Balai will coordinate with the relevant agencies suitable for the contents of the received grievance, and record and publish the results of the response.

The consultation meetings held for the LARAP are listed in Table-3; the first and second stages of the meetings were held during the period. In the second stage meetings, compensation policies based on the draft LARAP was explained, and brochures which explain compensation policies and grievance handling mechanisms were distributed to the affected people before the meeting. Most of the participants' comments were positive about the implementation of the Project, and there was no strong opposition to the land acquisition. Questions made for clarifying compensation policies and methodologies were answered by the LARAP experts.

Table-3 List of Consultation Meetings for LARAP

Category	Target people	Date	Location	Purpose
Coordination meeting	Heads of affected sub-districts and villages	August 27, 2021	Tambakdahan subdistrict hall	Sharing the project information and survey plan.
1 st stage with affected people	Affected landowners	October 21 – December 27, 2021	At each village	Sharing the project information and conducting survey
	Affected tenants and workers	December 29, 2021- January 11, 2022	At each village	
2 nd stage with affected people	All types of affected people (landowners, tenants, and workers)	February 22 – 6 March, 2022.	At each village	Sharing survey results and explaining compensation policies based on the draft LARAP

Source: Draft LARAP, February 2022

The Livelihood Restoration Program (LRP) was planned to be provided to the people affected by the land acquisition for the Project. Since the detailed contents of the program had not yet been specified at the LARAP formulation stage, the Technical Assistance prepared the detailed plan of the LRP. As a result of Focus Group Discussions (FGDs) with the affected people and discussion with the local government agencies of Subang Regency, 18 training programs for obtaining means of livelihood were identified. Eligibility was given to 2,570 households affected by the land acquisition, of which 2,480 households showed willingness to participate. The 18 programs and the number of participants for each program based on participants' preferences are shown in Table-4. Implementation was to be carried out by a consultant team procured by DGH in cooperation with Subang Regency over a period of two years.

Table-4 LRP Training Programs

No	Name of Program	Description	Implementation Period per Batch			Number of Participants	Number of Batches	Agencies of Subang Regency for Cooperation
			Skill Training	Individual Practice	Business Assistance			
1	Automotive Light Vehicle Engineering Skills Training	Maintenance skill training of light vehicles to be hired in workshops.	10 days	-	-	291	9	Manpower and Transmigration Agency
2	Sewing Training with Garment Qualification (W)	Sewing skill training to be hired in garment factories.	10 days	-	-	263	8	Manpower and Transmigration Agency
3	Gada Pratama Certificate Security Training	Training to be security guards.	6 days	-	-	210	7	Manpower and Transmigration Agency
4	Driving Training	Training of car driving to be hired for car terminal of the port.	6 days	-	-	198	6	Manpower and Transmigration Agency
5	Electric Welding Training	Welding skill training to be hired for construction works.	10 days	-	-	129	4	Manpower and Transmigration Agency
6	Forklift Operation Training	Forklift operation skill training to be hired for logistic works.	10 days	-	-	28	1	Manpower and Transmigration Agency
7	Rice-Based Food Processing Training (W)	Business training of producing and selling rice-based food.	3 days	2 weeks	1 month	142	5	Cooperatives, MSMEs, Trade and Industry Agency
8	Cassava and Banana Chips Training (W)	Business training of producing and selling cassava and banana chips.	3 days	2 weeks	1 month	105	3	Cooperatives, MSMEs, Trade and Industry Agency
9	Plastic Bag Craft Industry Development Training(W)	Skill training of making woven bags from plastic materials.	3 days	2 weeks	-	24	1	Women Empowerment and Child Protection Agency
10	Women's Training in Rural Areas in Productive Economic Businesses (W)	Basic training to support women's economic activities including cake making, use of hijaber, and stress management.	6 days	-	-	138	4	Women Empowerment and Child Protection Agency
11	Training on Increasing Agricultural Production Through Horticultural Crop Cultivation	Cultivation training of horticultural crops such as melon, eggplant, and flower.	9 days	2 weeks	1 month	434	14	Agriculture Agency

No	Name of Program	Description	Implementation Period per Batch			Number of Participants	Number of Batches	Agencies of Subang Regency for Cooperation
			Skill Training	Individual Practice	Business Assistance			
12	Agricultural Production Improvement and Rice Pest Management Training	Pest control training for rice cultivation.	12 days	2 weeks	1 month	205	7	Agriculture Agency
13	Agricultural Training in Narrow Land or Yard	Hydroponics and greenhouse cultivation training	4 days	2 weeks	1 month	41	2	Agriculture Agency
14	Catfish Cultivation and Hatchery Training	Hatchery and nursery training for catfish cultivation.	3 days	2 weeks	1 month	50	2	Fishery Agency
15	Carp Cultivation and Hatchery Training	Hatchery and nursery training for carp cultivation.	3 days	2 weeks	1 month	23	1	Fishery Agency
16	Tilapia Cultivation Training	Hatchery and nursery training for tilapia cultivation.	3 days	2 weeks	1 month	47	2	Fishery Agency
17	Freshwater Lobster Cultivation Training	Training of breeding technics for freshwater lobster cultivation	3 days	2 weeks	1 month	27	1	Fishery Agency
18	Sheep Farming Training and Concentrated Feed Making	Training of sheep farming technics	2 days	2 weeks	1 month	125	5	Livestock Agency
Total			-	-	-	2,480	82	-
Person not willing to participate			-	-	-	90	-	-

Five programs with (W) are those suitable for women.

Monitoring related to land acquisition and LRP will consist of 1) progress of land acquisition (in area and number of plots), 2) compensation payments, 3) house relocation, 4) livelihood conditions, 5) LRP implementation, and 6) grievance handling records. Of these, 3) and 4) will be conducted by a consultant team procured by DGH together with 5) LRP implementation. Monitoring of house relocation will be conducted four times a year during the LRP implementation period, and monitoring of livelihood conditions will be conducted once a year for four years starting from the year of LRP commencement (Table-5). In addition, external monitoring will be conducted by an independent agency for four years (Table-6). The external monitoring will cover land acquisition, resettlement, LRP implementation, and internal monitoring related to these activities, with the objective of confirming their appropriateness in terms of the Indonesian regulations and JICA Guidelines, as well as identifying and advising DGH on social issues related to the Project.

designated to be suitable for women to support restoration of livelihoods of the affected women, planned to be implemented with the cooperation of gender experts and Women Empowerment and Child Protection Agency of Subang Province.

Chapter 8. Climate Change

Referring to JICA Climate - FIT (Adaptation), climate change risk of the Project was evaluated and considered its adaptation option was considered.

First, the current and future trends on climate and disasters in the project area were analyzed, and the climates that could affect the project (*hazards*) were defined as "flood" and "sedimentation caused by rain". Next, the components of the Project that are vulnerable to these hazards were examined, and "embankment," "overpass and bridges," "drainage and irrigation," and "underpasses" were identified as *exposures*. Then, using climate risk matrix, the impact and scale of damage caused by the combination of hazards and exposures were examined based on historical data, and identified those that had significant damage in similar projects in the nearby area as the *vulnerability* of the Project. Considering the information, a risk that may become important (prominent) in the future due to an increase in the frequency of the hazard occurrence, etc. were identified as the *climate risk*, and the potential adaptation options to the climate risk were discussed.

The results were summarized in climate risk matrix. Among the exposures, "drainage and irrigation" were considered to be the most vulnerable to climate change and the scale of damage was considered to be the largest. The adaptation options for this were considered to be installation of drainage system that can handle heavy rainfall as a tangible option, and development and implementation of regular maintenance and management plans of drainages as an intangible option.

In addition, direct GHG emissions from the Project (the government project section being financed by ODA loan), so called Scope 1 based on GHG protocol⁷, was calculated. As a result, Scope 1 GHG emission was estimated to be approximately 24,950 tons of CO₂-equivalent emission annually, which was below 25,000 tons.

⁷ <https://ghgprotocol.org/>

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Abbreviations

AMDAL	<i>Analisis Mengenai Dampak Lingkungan</i> (Environmental Impact Assessment)
ANDAL	<i>Analisis Dampak Lingkungan</i> (Environmental Assessment Report)
ATR/BPN	<i>Kementerian Agraria dan Tata Ruang /Badan Pertanahan Nasional</i> (Ministry of Agrarian Affairs and Spatial Planning/National Land Agency)
DGH	Directorate General of Highways, Ministry of Public Works and Housing
BOT	Build – Operate – Transfer
BPJT	<i>Badan Pengatur Jalan Tol</i> (Indonesia Toll Road Authority)
BP4D	<i>Badan Perencanaan Pembangunan, Penelitian dan Pengembangan Daerah</i> (Regional Development Planning, Research and Development Agency)
DGST	Directorate General of Sea Transportation, Ministry of Transportation
DKUPP	<i>Dinas Koperasi, UMKM, Perdagangan dan Perindustrian</i> (Cooperatives, Micro, Small & Medium Enterprises (MSMEs), Trade and Industry Agency)
DP2KBP3A	<i>Dinas Pengendalian Penduduk, Keluarga Berencana, Pemberdayaan Perempuan dan Perlindungan Anak</i> (Population Control, Family Planning, Women's Empowerment and Child Protection Agency)
GHG	Greenhouse Gas
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
F/S	Feasibility Study
IC	Interchange
IUCN	International Union for Conservation of Nature and Natural Resources
IDR	Indonesian Rupiah
JICA	Japan International Cooperation Agency
JICA Guidelines	JICA Guidelines for Environmental and Social Considerations
JM	PT. Jasa Marga (Indonesian Highway Corp.)
KA-ANDAL	<i>Kerangka Acuan ANDAL</i> (Terms of Reference of ANDAL)
LARAP	Land Acquisition and Resettlement Action Plan
LRP	Livelihood Restoration Program
MSMEs	Micro, Small and Medium Enterprises
NT	Near Threatened Species (IUCN Red List Category)
ODA	Official Development Assistance
OHS	Occupational Health and Safety
PAPs	Project Affected Persons
PPP	Public-Private Partnership
PR	Presidential Regulation
Pre-F/S	Pre-Feasibility Study
PSN	<i>Proyek Strategis Nasional</i> (National Strategic Project)
PUPR	<i>Kementerian Pekerjaan Umum dan Perumahan Rakyat</i> (Ministry of Public Works and Housing)
RKL-RPL	<i>Rencana Pengelolaan Lingkungan Hidup - Rencana Pemantauan Lingkungan Hidup</i> (Environmental Management and Monitoring Plan)
SHM	Stakeholders Meeting
TOR	Terms of Reference
TSP	Total Suspended Particles
UKL-UPL	<i>Upaya Pengelolaan Lingkungan – Upaya Pemantauan Lingkungan</i> (Environmental Management and Monitoring Program)

UNESCO
VU

United Nations Educational, Scientific and Cultural Organization
Vulnerable Species (IUCN Red List Category)

Chapter 1. Overview of the Technical Assistance

1.1 Objectives

Objectives of the Technical Assistance on Environmental Social Considerations for Patimban Access Toll Road Development (hereinafter referred to as “The Technical Assistance”) is to contribute to logistics improvement in Jakarta Metropolitan Area and business environment improvement as a result of speedy development and smooth implementation of the Patimban Access Toll Road Project (hereinafter referred to as “the Project”) by means of 1) supporting develop or update land acquisition plan and involuntary resettlement action plan (Land Acquisition and Resettlement Action Plan: LARAP) for the Project, and advising to implementation of the plans smoothly; 2) analyzing the gap of environmental assessment requirements between the Indonesian regulations and JICA Guidelines,⁸ and advising the executing agencies in complying with JICA Guidelines.

1.2 Expected Outcomes

Outcome 1 : LARAP for the Project is developed complying with JICA Guidelines.

Outcome 2 : Draft Environmental Impact Assessment (EIA) Report for the Project is developed complying with JICA Guidelines.

Outcome 3 : Understanding of environmental and social considerations of the executing agencies is enhanced to implement the Project, and the process described in JICA Guidelines is practiced.

1.3 Activities

1-1) To advise the executing agencies to develop draft land acquisition plan complying with JICA Guidelines by reviewing the existing draft land acquisition plan considering the review of the feasibility studies for Patimban Port Development Project.

1-2) To advise the executing agencies to develop draft resettlement action plan complying JICA Guidelines by analyzing the gap between the Indonesian law and requirements of JICA Guidelines.

2-1) To advise the executing agencies in scoping of the EIA as needed by reviewing the existing draft environmental impact assessment report (scoping) considering the review of the feasibility studies for Patimban Port Development Project.

2-2) To advise the executing agencies in developing draft environmental impact assessment report through the gap analysis between Indonesian regulations and JICA Guidelines and necessary surveys including a census based on JICA Guidelines.

3) To advise as needed in practicing appropriate environmental and social consideration complying with JICA Guidelines.

1.4 Related Organizations

The related agencies and executing agencies for the Service are shown as below:

1) The executing agency for the Patimban Access Toll Road Project: Directorate General of Highways (DGH), Ministry of Public Works and Housing (Direktorat Jenderal Bina Marga, Kementerian

⁸ JICA Guidelines for Environmental and Social Considerations, January 2022

Pekerjaan Umum dan Perumahan Rakyat: PUPR)

- 2) The responsible agency for road by Public Private Partnership (PPP): Indonesia Toll Road Authority, Ministry of Public Works and Housing (Badan Pengatur Jalan Tol: BPJT)
- 3) The executing agency for Patimban Port Development Project: Directorate General of Sea Transportation (DGST), Ministry of Transportation

1.5 Implementation Structure

The EIA and LARAP reports to be advised by the Technical Assistance were prepared by the consulting service for the Patimban Port Project, Package 8, JICA Loan No. IP-577, together with the technical review of the existing feasibility study of the Project. While the executing agency for the Toll Road Project is PUPR, the port development project is implemented by DGST, so the consulting service is managed by DGST. Therefore, this Technical Assistance is provided with cooperation and coordination of PUPR as the executing agency of the Project and DGST with their consulting service team which reviews feasibility studies (see Figure 1.5-1).

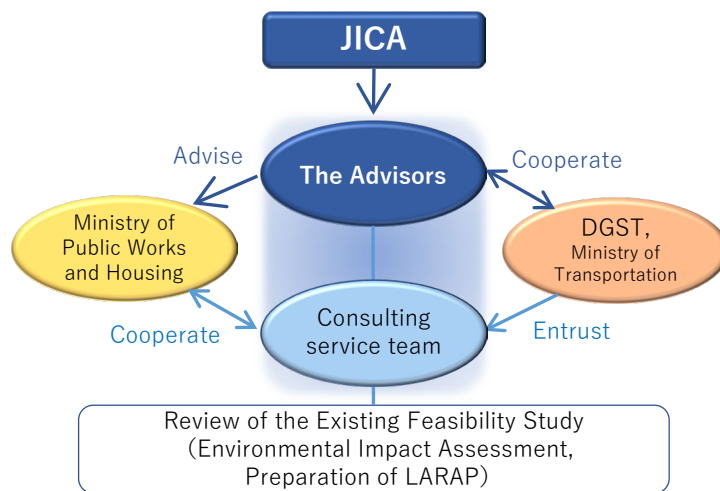


Figure1.5-1 Implementation Structure

Chapter 2. Review of the Project Background and the Necessity

2.1 Background of the Project

Patimban Port located in Subang Regency, West Java Province, has started its operation in December 2020 parallelly with the construction still in process. The construction of the port is financed by Japanese ODA loan based on the plan of the Ministry of Transportation of the Government of Indonesia which aims to handle 7.38 million Twenty-foot Equivalent Unit (TEUs) by 2030. The construction works started in 2018 and the Phase 1-1 works which includes two berths for a car terminal and a container terminal have been completed. To secure the transportation of the port cargo, a port access road with the length of 8.1 km has also been constructed and started its operation connecting with the National Road No.1 known as 'Pantura line'. However, considering the congestion on the National Road No.1, it was deemed necessary to develop a new toll road which connects the port access road directly with the existing toll road network without interrupting the traffic on the National Road No.1.⁹

Patimban Access Toll Road (hereinafter referred to as "the Project") was planned by the Government of Indonesia as the new toll road which connects the port access road with the Cikopo-Palimanan (Cipali) Toll Road. Since Patimban Port has been designated as a National Strategic Project (Proyek Strategis Nasional: PSN) by Presidential Regulation No.47/2016, a road network to connect with the other national strategic areas are required by Government Regulation No.13/2017 concerning amendments of Government Regulation No.26/2008 concerning National Spatial Planning. Considering the requirement, the Project was listed as a National Strategic Project in the Presidential Regulation No.109/2020 concerning the third amendment of the Presidential Regulation No.3/2016 concerning the acceleration of the implementation of National Strategic Projects.

The Project has been included in the National Spatial Plan by Government Regulation No.13/2017 in the attachment III as a toll road plan of Subang-Patimban. Although it has not yet included in the existing regional spatial plans of West Java Province and Subang Regency, it was already confirmed that the project would be accommodated in the updated plans to be issued.¹⁰

The feasibility study of the Project was conducted in 2018¹¹ by a consortium led by PT Jasa Marga, an Indonesian State-Owned Enterprise which is engaged in providing toll road services, and updated in 2020¹² with the direction of the Directorate General of Highways (DGH) of the Ministry of Public Works and Housing (Direktorat Jenderal Bina Marga, Kementerian Pekerjaan Umum dan Perumahan Rakyat: PUPR). In 2021, the Government of Indonesia expressed its intention to construct a part of the section of the toll road with the financial support by the Japanese ODA loan as a public project while it was expected that the project would be implemented as a BOT, public-private partnership (PPP) project in principle.

For obtaining the environmental permit, the process of Environmental Impact Analysis (Analisis Mengenai Dampak Lingkungan Hidup: AMDAL) has been initiated in 2020 in conformity with the Law No.32/2009 concerning Environmental Protection and Management, Government Regulation No.27/2012 concerning environmental permit, and the other relevant regulations in Indonesia. Since the consortium led by PT Jasa Marga was going to be the project initiator at that time, the Reference Framework of Environmental Impact Analysis (Kerangka Acuan Analisis Dampak Lingkungan Hidup: KA-ANDAL), which corresponds to a scoping report for the Environmental Impact

⁹ Final Report for the Preparatory Survey on Patimban Port Development Project in the Republic of Indonesia, JICA, 2017

¹⁰ Final Report, Preparatory Survey on Patimban Port Toll Road Project (PPP Infrastructure Project) (First Phase) in the Republic of Indonesia, JICA, 2019

¹¹ Studi Kelayakan dan Basic Design Jalan Tol Akses Patimban, 2018

¹² Reviews and Improvements of Feasibility Study and Basic Design Patimban Access Toll Road, 2020

Assessment (EIA), was prepared by the consortium and has already been approved by the environmental agency of Subang Regency in March 2021. Although nearly one year has passed and the project initiator has been changed after the approval, it was confirmed with the Subang Regency that the KA-ANDAL was still valid as the base for the EIA and further process toward obtaining the environmental permit for implementing the project. Since the project initiator is currently planned to be DGH, it is going to be responsible for the EIA and the related environmental and social considerations.

The planned new toll road requires land acquisition. In conformity with the Law No.2/2012 and Presidential Decree No.71/2012 on land acquisition, DGH and the consortium of PT Jasa Marga have prepared a land acquisition planning document (Dokumen Perencanaan Pengadaan Tanah: DPPT) for the project in 2020, and DGH has submitted it to the government of West Java Province for proceeding with the land acquisition based on the relevant regulation. Responding to the submission, the governor of the province issued a location determination (penetapan lokasi: penlok) for the ROW of the planned toll road with the area of ±340.116 ha dated on 29 December 2021¹³ which officially announced the land acquisition within the area.

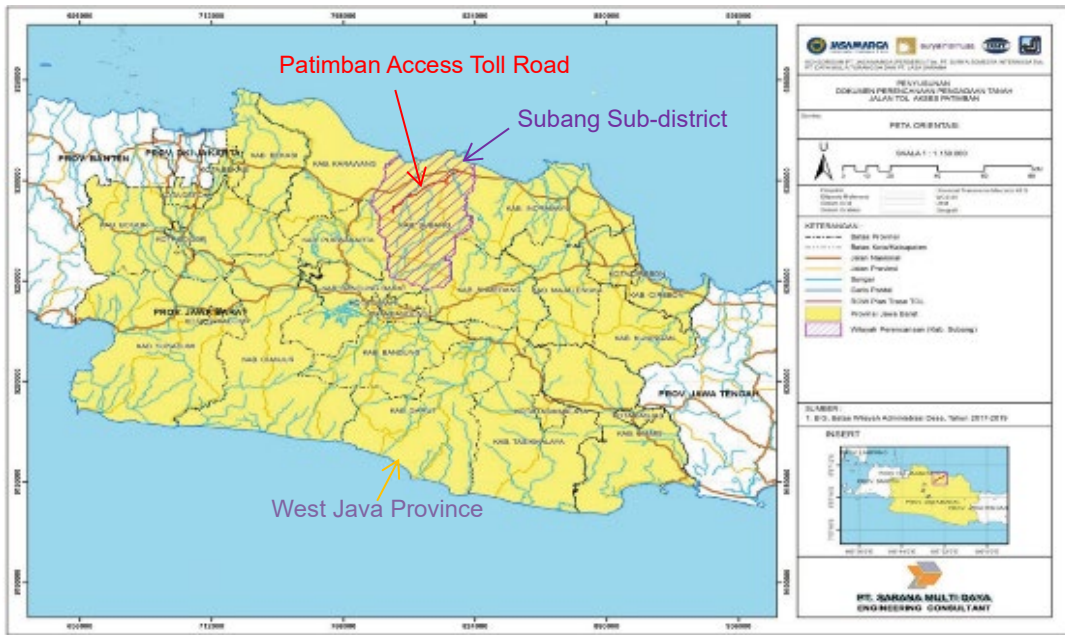
Under the circumstances described above, the technical adequacy of the existing feasibility study was examined by the Indonesian side through the consultant service for the construction of Patimban Port in order to formulate the project as an ODA loan project. However, it was still necessary to support the appropriate environmental and social considerations in accordance with JICA Guidelines. “Technical Assistance on Environmental Social Considerations for Patimban Access Toll Road Development” aims to support preparing AMDAL and Land Acquisition and Resettlement Action Plan (LARAP) for the Project so that the executing agency of the Project can comply with JICA Guidelines.

2.2 Project Location

The Project is located in Subang Regency, West Java Province (Figure 2.2-1). The overall length of the proposed toll road is 37 km consisting of 14 km of a PPP project and 23 km of the government project which is being financed by the ODA loan. The proposed toll road is equipped with four interchanges in addition to a junction with the Cipali toll road.

The AMDAL and LARAP are prepared for entire section of 37 km.

¹³ Gubernur Jawa Barat Keputusan Gubernur Jawa Barat Nomor:593/Kep.848-Pemotda/2021 tentang Penetapan Lokasi Pengadaan Tanah untuk Pembangunan Jalan Tol Akses Patimban di Kabupaten Subang



Source: DPPT 2020

Figure 2.2-1 Project Location



Figure 2.2-2 Project Location

2.3 Overview of the Project Area

2.3.1 Social Condition

(1) Administrative Boundary and Land Use

The access toll road requires an area of about 340 ha, crossing 20 villages of 10 sub-districts (Table 2.3.1-1) which are affected villages by the project. The current land use of villages on planned toll road alignment consists of: rice fields; gardens (farms); and settlements (houses and other buildings).

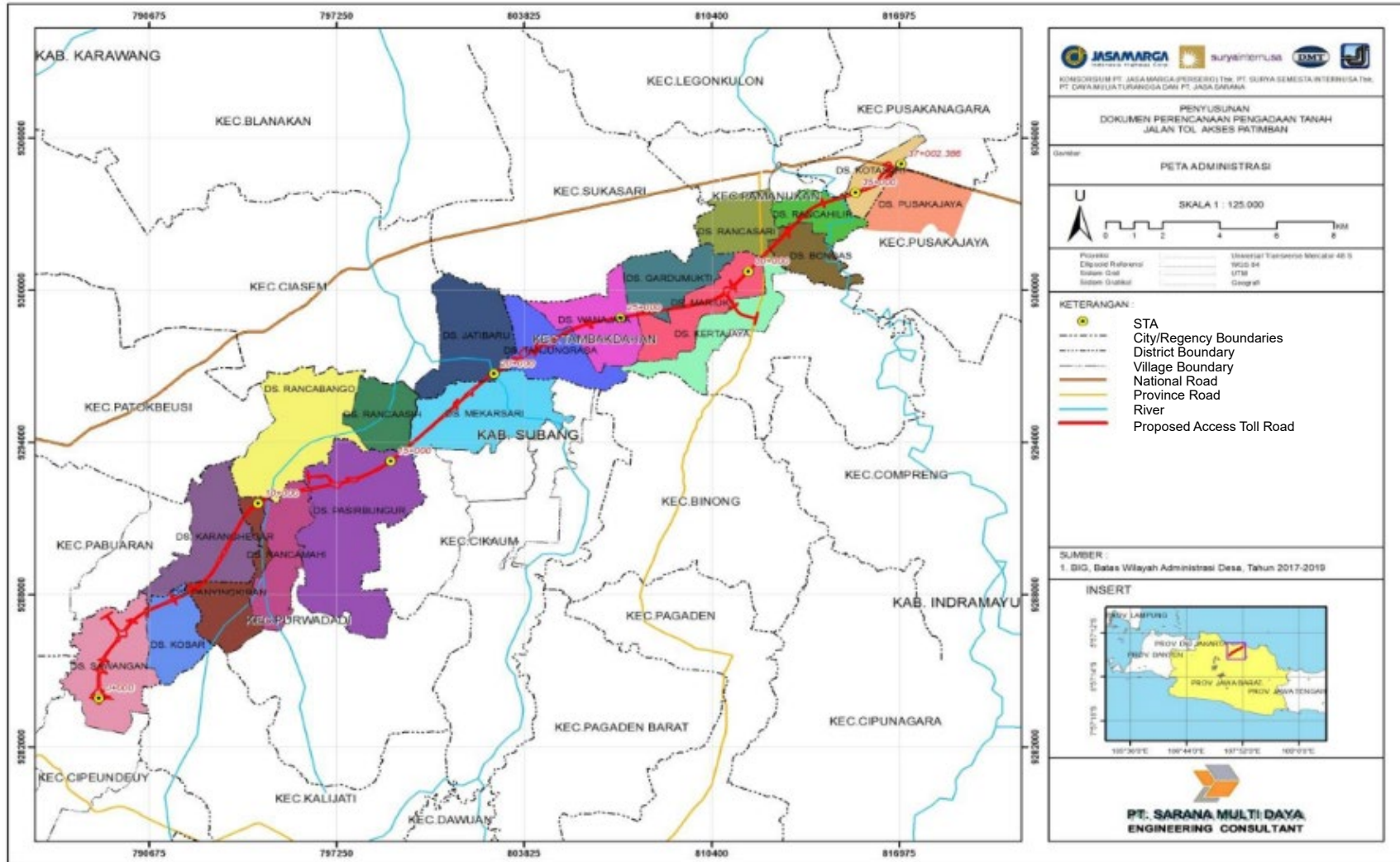
Table 2.3.1-1 Administrative area crossed by Access Toll Road Plan Patimban

No	Sub-district	No.	Village
1	Sub-district Cipeundeuy	1	Village Sawangan
		2	Village Kosar
2	Sub-district Pabuaran	3	Village Karanghegar
3	Sub-district Purwadadi	4	Village Panyingkiran
		5	Village Rancamahi
		6	Village Pasirbungur
4	Sub-district Patokbeusi	7	Village Rancabango
5	Sub-district Cikaum	8	Village Pasirmuncang
		9	Village Mekarsari
6	Sub-district Ciasem	10	Village Jatibaru
7	Sub-district Tambak Dahan	11	Village Tanjunggrasa
		12	Village Wanajaya
		13	Village Gardumukti
		14	Village Mariuk
		15	Village Kertajaya
8	Sub-district Pamanukan	16	Village Rancasari
		17	Village Rancahilir
		18	Village Bongas
9	Sub-district Pusakanagara	19	Village Kotasari
10	Sub-district Pusakajaya	20	Village Pusakajaya

Source: LARAP Report, May 2022

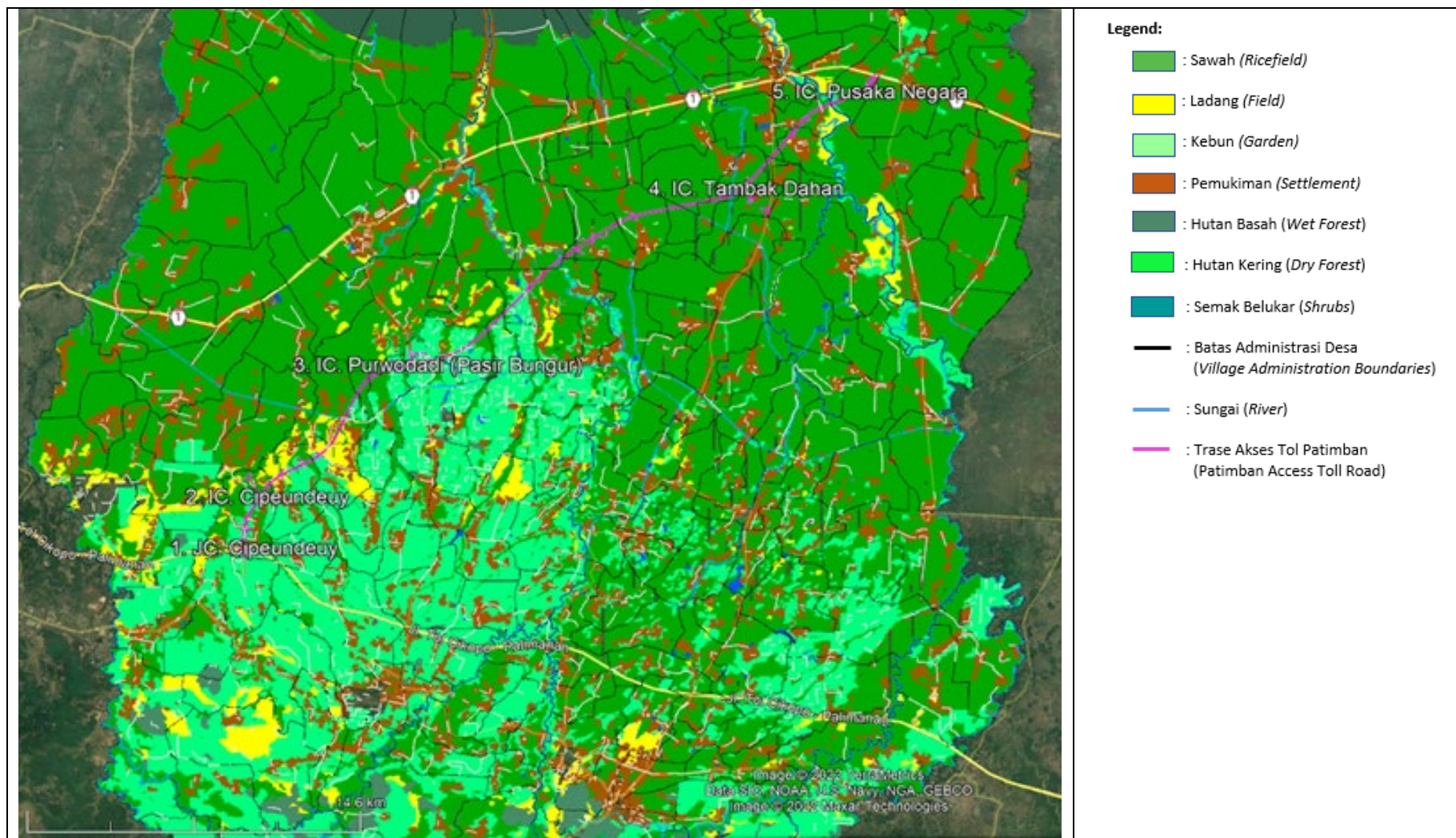
(2) Cultural Heritage

No cultural heritage registered in UNESCO and Indonesian government does not exist in and around the project site.



Source: Draft EIA Report

Figure 2.3.1-1 Map region crossed administration Trace Access Toll Road Plan



Source: GIS data from Subang Regency, 2019

Figure 2.3.1-2 Land Use of Subang Regency in 2019

2.3.2 Natural Condition

(1) Climate

The climate of Subang Regency is wet tropical, which is influenced by tropical monsoons. The west monsoon and northeast winter monsoons from October to April bring rainy season. The east monsoon and southwest summer monsoons from April to October bring dry season.

The climate parameters observed in Subang Regency area using the data of 12 years (2008-2019) include air temperature, humidity, air pressure, monthly rainfall, maximum rainfall, rainy days and wind direction and speed. The summary is shown as below table.

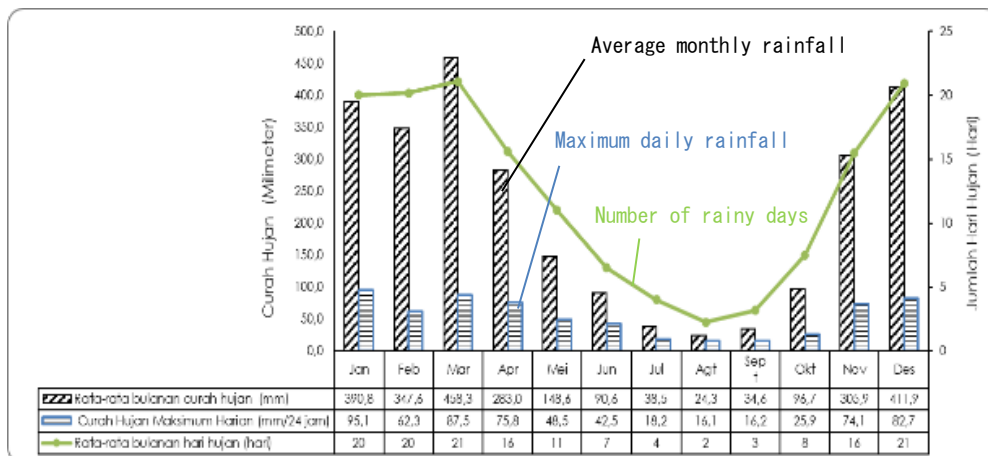
Table 2.3.2-1 Summary of Average, Maximum and Minimum Values of Climate Parameters

Component Climate	Average	Maximum	Minimum
Average Air Temperature (C)	27.5	29.0	26.5
Average Air Humidity (%)	77.9	86.7	65.4
Average Monthly Rainfall (Millimeters)	219.2	844.0	0
Average Number of Rainy Days Monthly (Day)	12	27	0
Annual Rainfall (millimeter / Year)	2630.7	3,464.7	1,538.7
Average air pressure (milli bar)	1011,2	1,011.9	1,009.1

Source: Station Meteorology Meteorology Kalijati Subang 2020

The study area’s average wet season is for 7.33 months and average dry season is for 3.42 months. The average annual rainfall in the study area is 2,630.7 millimeters. The highest annual rainfall reached 3,464.7 millimeters occurred in 2010 and the lowest was 1,538.7 millimeters in 2019.

The average monthly rainfall is 219.2 millimeters with an average rainy days of 12 days/month. The highest monthly rainfall reached 844.0 millimeters is in July, and the most rainy days in a month is 27 days which is in March. The least monthly rainfall is 0 millimeters in August and September (Figure 2.3.2-1).



Source: Station Meteorology Meteorology Kalijati Subang 2019

Figure 2.3.2-1 Average Monthly Rainfall

(2) Geology

Subang Regency is located in the Jakarta Coastal Plain/North Coast Zone according to West

Java physiographic zoning. This area is facing to the Java Sea with a width of approximately 40 km stretching from Serang to Cirebon. Most of the area is covered by alluvial deposits transported by rivers running into the Java Sea such as Citarum River, Cimanuk River, Ciasem River, Cipunagara River, Cikeruh River, and Cisanggarung River. In addition, lahar deposits from Mount Tangkuban Parahu, Mount Gede and Mount Pangrango forms alluvial volcanic fan, especially where bordering on the Bandung zone.



Source: Van Bemmelen, 1949 in Martodjojo, 1984

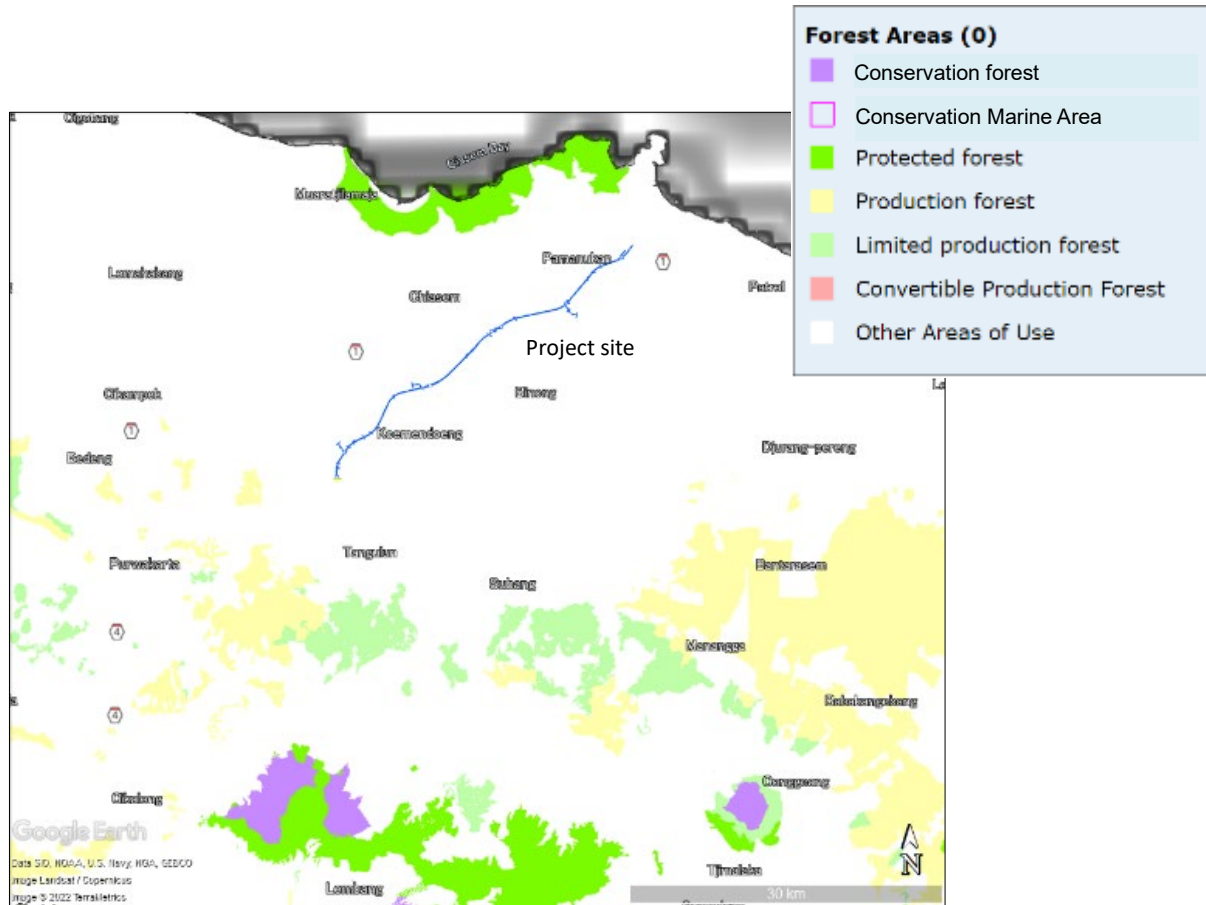
Figure 2.3.2-2 West Java Physiographic Division

(3) Protected area

According to the Forest Law No.41 / 1999, conservation forest is designated as forest areas with the function of maintaining biodiversity and ecosystem of plants and animals, which corresponds to protected areas in JICA Guidelines. In conservation forests, commercial logging and other resource development is prohibited. The nearest conservation forest to the project site is located about 30 km south away from the project site (Figure 2.3.2-3).

Protected forest is designated as the forest for water and soil conservation such as watershed preservation, flood protection, soil-erosion protection, and prevention of seawater intrusion. In a protected forest, commercial logging is prohibited. A protected area is located 5km away to northwest from the nearest edge of the project site. Production forest is defined as the forest which has the function of producing forest products. The nearest production forest is at 5km west from the south edge of the project site.

Other national parks and Ramsar wetlands do not exist in and within a few dozen kilometres from the project site.



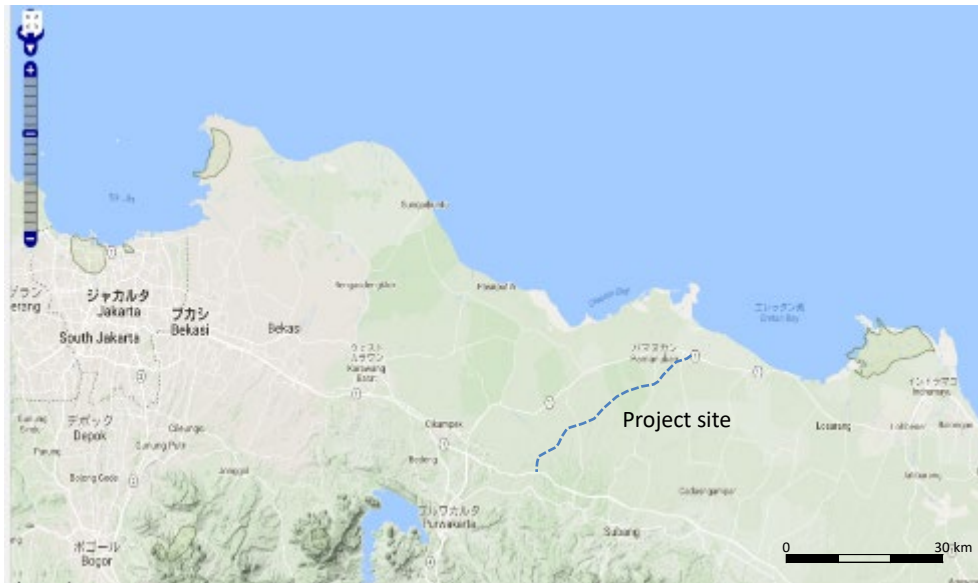
Source: Ministry of Environment and Forestry of the Republic of Indonesia

Figure 2.3.2-3 Map of Protected Forests

(4) Ecosystem

As mentioned in land use and protected area, most of land use within a few dozen kilometers from the project site is agricultural lands and settlements. There is no biologically important area for ecosystem such as wetlands, mangroves, or primeval forest.

Important bird and biodiversity areas (IBA) designated by Bird Life International are located in about 100km west and about 40km east of the project site, however, no IBA is existed in and around the project site. (Figure 2.3.2-4)



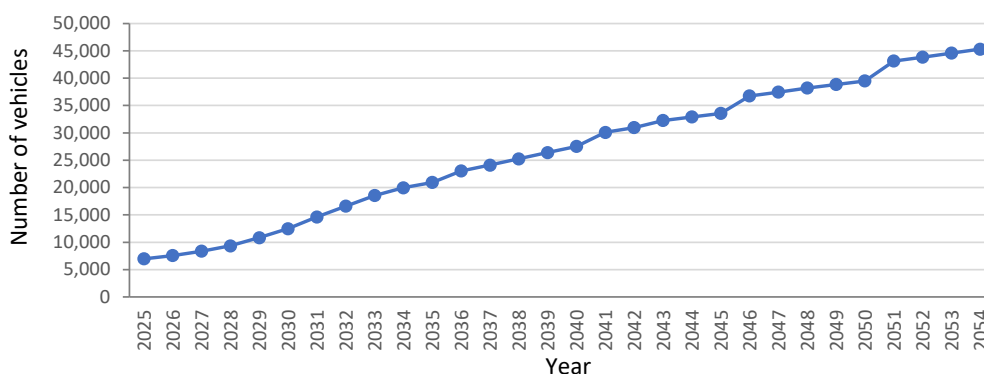
Note: IBA. 
Source: Bird Life International

Figure 2.3.2-4 Important bird and biodiversity areas (IBA)

2.4 Project Demand

The traffic demand of the access toll road was forecasted by the consulting service team as the part of feasibility study review. As the results of the estimation considering traffic generation from Patimban Port and industrial areas, the number of vehicles passing the access toll road is estimated to exceed 20 thousand per day in 2035 and reach 40 thousand per day in 2050 (Figure 2.4-1).

Comparing with the case if the access toll road is not developed (without-case), the traffic volume of the National Road No.1 will be increased 45% compared with the case with the toll road at the time of 2045 because the port traffic has to use the existing roads (Table 2.4-1). Considering the travel time and the travel cost increased due to the traffic congestion at the National Road, the review study concluded that the Project is beneficial in terms of the economic aspects with the Internal Economic Rate of Return (EIRR) of 15.7%.¹⁴



Source: Prepared based on Draft Review of Feasibility Study Report, March 2022

Figure 2.4-1 Forecasted Traffic Volume on the Access Toll Road
(IC Tambakdahan – IC Pusakanegara)

¹⁴ Draft Review of Feasibility Study Report, Detail Design and Tender Assistance Consulting Services of Patimban Access Toll Road, March 2022

Table 2.4-1 Forecasted Traffic Volume in 2045

Type of vehicle	Vehicle/day				
	With-case		Without-case	Difference: Without-With	
	Toll Road	National Road No.1	National Road No.1	National Road No.1	
	(IC Tambakdahan – IC Pusakanegara)	(Pamanukan)		(Ratio to with-case)	
Passenger car	7,019	20,916	28,808	7,892	(38%)
Bus	558	1,664	2,292	628	(38%)
Small Truck	399	1,188	1,637	449	(38%)
Truck	25,575	44,532	66,254	21,722	(49%)
Total	33,551	68,300	98,991	30,691	(45%)

Source: Prepared based on Draft Review of Feasibility Study Report, March 2022

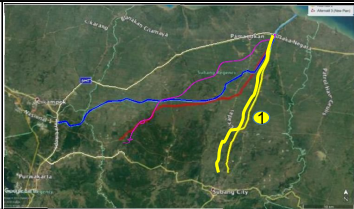


Chapter 3. Advice on Alternative Analysis

Since alternative analysis is required by JICA Guidelines, the existing analysis in the studies was reviewed and advised as follows.

3.1 Alternative Analysis on Pre-feasibility Study

Multi-criteria comparison analysis on alternative routes has been studied on *Pre-feasibility study report* by Jasa Marga (December 2017) (Table 3.1-1). Three routes are 1) Alternative 1 (starting at Subang Interchange connecting to Pusakanegara Ditric and the end of access road to Patimban port); 2) Alternative 2 (54.20km length, starting at Cikampek toll access road, connecting Pusaka Negara Sub-district, and the end of access road to Patimban port; and 3) Alternative 3 (37.80km length, starting at Cipeundeuy Sub-district connecting to Cikopo-Palimanan toll road and the end of access road to Patimban port). These three routes were compared with the criteria of technical characteristics, land acquisition and land use, road accessibility, and social and environmental aspect. Based on the result of comparative analysis, alternative 3 is the best among three leading aspects of land acquisition and land use, road accessibility, and social and environmental aspect.

Table 3.1-1. The Result of Comparative Analysis

Figure Plan										
No	Criteria	Alternative - 1	Score	Rate	Alternative - 2	Score	Rate	Alternative - 3	Score	Rate
1	Main Road Technical Characteristics (30%)									
1a.	Main Toll Road	29.80	10.00	3.00	54.20	5.50	1.65	37.80	7.88	2.37
	Long mileage from KM.72+000 to Sta.0+000	38.00			0.00			17.10		
	Total of Long mileage from KM.72+000 to Sta.0+000	67.80	7.99	2.40	54.20	10.00	3.00	54.90	9.87	2.96
1b.	Crossing with the local road									
	* Road Crossing	23	10.00	3.00	41	5.61	1.68	30	7.67	2.30
	- Overpass	13	10.00	3.00	25	5.20	1.56	16	8.13	2.44
	- Underpass	0	10.00	3.00	0	10.00	3.00	1	10.00	3.00
	- Bridge	10	10.00	3.00	16	6.25	1.88	13	7.69	2.31
	*River Crossing	7	4.29	1.29	7	4.29	1.29	3	10.00	3.00
	* Crossing Irrigation Channels	0	10.00	3.00	4	10.00	3.00	7	5.71	1.71
	* Crossing the East Tarum Channel	1	10.00	3.00	2	5.00	1.50	1	10.00	3.00
	* Railway Crossing	1	10.00	3.00	1	10.00	3.00	1	10.00	3.00
1c.	Estimation cost (Draft)									
1d.	Geo-technic									
	* Plain morphology -low hills	Yes	10.00	3.00	Yes	10.00	3.00	Yes	10.00	3.00
	* Areas prone to earthquakes of intensity V-VIII MMI	No	10.00	3.00	No	10.00	3.00	No	10.00	3.00
	* Landslide prone areas	No	10.00	3.00	No	10.00	3.00	No	10.00	3.00
	TOTAL			36.68			30.55			35.09
2	Land Acquisition & Land Use (20%)									
2a.	Estimated Land Acquisition (m2)	1,490,000.000	10.00	2.00	2,710,000.000	5.50	1.10	2,052,863.180	7.26	1.45
2b.	Land Use Along the Road									
	1. Vacant Land/ Rice Fields and Plantations (m2)	1,430,400.00	10.00	2.00	2,574,500.00	5.56	1.11	1,852,200.00	7.72	1.54
	2. Settlement (m2)	44,700.00	4.23	0.85	54,200.00	3.49	0.70	18,900.00	10.00	2.00
	3. Roads and Infrastructure (m2)	14,900.00	3.81	0.76	40,650.00	1.39	0.28	5,670.00	10.00	2.00
	4. Industrial Estate (m2)	-	10.00	2.00	13,550.00	9.76	1.95	13,230.00	10.00	2.00
	TOTAL			7.61			5.14			9.00
3	Road Accessibility (20%)									
3a.	Connectivity to the Toll Road Network around the Study Location	The beginning of the project was connected to the CIPALI Toll Road. The end of the project is connected to the Indramayu-Subang-Karawang National Road	10.00	2.00	The beginning of the project was connected to the CIKAMPEK Toll Road. The end of the project is connected to the Indramayu-Subang-Karawang National Road	10.00	2.00	The beginning of the project was connected to the CIPALI Toll Road. The end of the project is connected to the Indramayu-Subang-Karawang National Road	10.00	2.00
3b.	Interchange plan location connectivity to the Road Network around the Study Location							The beginning IC Access is connected to the Regency road Access length : 1.930 Km	10.00	2.00
	TOTAL			2.00			2.00			6.00
4	Overview of Social and Environmental Aspects (30%)									
4a.	Status of Land Ownership	People with diverse ownership status, Government Agencies and companies	10.00	3.00	People with diverse ownership status, Government Agencies and companies	10.00	3.00	People with diverse ownership status, Government Agencies and companies	10.00	3.00
4b.	Socialization and Realization	The residential areas which affected by the planned toll road are more areas, so socialization and realization are more difficult	5.00	1.50	The residential areas which affected by the planned toll road are more areas, so socialization and realization are more difficult	5.00	1.50	The residential areas which affected by the planned toll road are not more areas, so socialization and realization are more easy	10.00	3.00
	TOTAL			4.50			4.50			6.00
	GRAND TOTAL			50.78			42.19			56.08

Source: Pre-Feasibility Study and Initial Design of The Patimban Port Access Toll Road, 2017

3.2 Analysis on Feasibility Study Review

Above study was reviewed in perspective from comprehensive clarification by FS Review Team. As a result, alternative 3 is again recommended for following reasons:

- Constructability is superior to other alternatives.
- Synergy Effect is the most superior among alternatives.
- Arrangement of Junction (JCT) is appropriate from the viewpoint of interval between JCT and Interchange.

Detailed analysis results is shown in Table 3.2-1.

Table.3.2-1 Review of Route Selection

Alternatives	Alternative 1	Alternative 2	Alternative 3	Without Option
Plan View				
Route Length	29.8 km [Good]	54.2 km [Poor]	37.8 km [Fair]	0 km
Social Environment	Many resettlements are required (44,700 m2). [Poor] Land acquisition is the lowest among alternatives (1,490,000 m2). [Good]	Many resettlements are required (54,200 m2). [Poor] Land acquisition is the largest (2,710,000 m2) [Poor]	The resettlements are lowest among alternatives (18,900 m2). [Good] Land acquisition is larger than Alt-1 (2,053,000 m2). [Fair]	N/A
Synergy Effect	The route is far from industrial areas. [Poor]	The route passes through near large industrial area. [Fair]	The route connects Subang Smart City and Patimban Port directly. [Good] The route passes through in central large industrial area. [Good]	N/A

Arrangement of Junction (JCT)				
	JCT is constructed near IC, thus traffic flow is complex. [Poor]	JCT is constructed near IC, thus traffic flow is complex. [Poor]	Arrangement of JCT is appropriate because interval from IC is secured adequately. [Good]	N/A
Evaluation			Recommended	

Source: Draft Review of Feasibility Study Report, March 2022

3.3 Past Alternative Analysis Review

The alternative analysis by Jasa Marga in 2017 was an analysis using the multi-criteria scoring method; the allocation of the score to each criterion was 30% for technical characteristics, 20% for land acquisition and land use, 20% for road accessibility, and 30% to social and environmental aspects. Although the allocation to road accessibility was relatively smaller, one of the reasons for Alternative 3, the selected option, to gain a high score was an advantage on accessibility.

The details of the accessibility were reviewed by FS Review Team and updated as Synergy Effect. Synergy Effect mainly focusing on connectivity with industrial areas especially Subang Smart City being planned around Cipeundeuy, where the selected route is connected.

Social impacts caused by the land acquisition were another highlighted issue in both analysis. Although Alternative 1 is the shortest in length, Alternative 1 and 2 affect settlement areas largely while Alternative 3 could minimize.

Impacts on natural environment was not mentioned in both analysis. This may be because most of the area between the port and the existing toll road is used as agricultural land, and there are no protected areas or other areas identified as critical habitat, making it difficult to determine the superiority of the options in terms of natural environment.

In summary, it seems reasonable that Alternative 3 was selected in terms of the advantages of connectivity with industrial areas expecting synergy effect, and minimizing social impacts caused by land acquisition.

3.4 Alternative Analysis

Based on past alternative analysis review, the same three routes are reviewed and re-analyzed as follows.

3.4.1 Criteria and Analysis Method

In pre-feasibility study, alternatives were compared from multi-aspects: technical aspect; land use; accessibility; and social and environmental aspects. Data of each alternative (e.g., length of routes, footprints of lands) were converted into 10 points and calculated with weight on more important criteria

than others such as social and environmental impact and accessibility to other development plan. However, scoring was not necessarily accurate and could not have been compared because number of datasets in each aspect and criterion was not the same while important criteria was weighted.

This re-evaluation analysis also uses data from the pre-feasibility study and further comparison analysis report “Draft Review of Feasibility Study Report” studied by Feasibility Study team. These data are comprehensively re-organized into alternative comparison analysis table. Three alternatives are compared and evaluated at each aspect from the perspectives as shown in Table 3.4-1.

Table 3.4-1 Evaluation Criteria

Criteria		Evaluation Criteria
Technical aspect	Length (km)	Shorter is better in terms of cost, and potential impact on various environment and social aspect.
	Overpass	Less is better in terms of cost, technical difficulty, and potential effect of shading situation.
	Underpass	Less is better in terms of cost, technical difficulty, and potential impact on groundwater hydrology.
	Bridge	Less is better in terms of cost, technical difficulty, and potential impact on hydrology and temporal aquatic ecosystem.
Current land use	Agricultural area (m2)	Smaller is better in terms of potential impact on community livelihoods and economy, and cost of compensation.
	Settlement (m2)	Smaller is better in terms of potential impact on community physical relocation livelihood, and cost of compensation.
	Roads and infrastructure (m2)	Smaller is better in terms of potential impact on community services and transportation.
	Industrial estate (m2)	Smaller is better in terms of potential impact on community economy and cost of compensation.
Accessibility	Accessibility to surrounding development plan.	Great connection with industrial areas and/or core economical area and the Patimban Port is better in terms of synergy effect including efficient logistics and economic vitalization.
Environmental aspect	Protected area and protected forest area	Desirably no protected and forest area should be on the route.
	River crossing points	Lesser is better in terms of hydrology and temporal aquatic ecosystem.
Social Aspect	Acquired Area(m2)	Smaller is better in terms of potential impact on various social impact and cost of compensation.
	Settlement Area (m2)	Smaller is better in terms of potential impact on community physical relocation, livelihoods, and cost of compensation.
Evaluation		Each route is evaluated for recommendation based on above scores. Route characteristic as analyzed above is highlighted.

3.4.2 Results of Analysis

Based on above evaluation criteria, three alternative routes are compared and analyzed with the data from pre-feasibility study. The result is shown in Table 3.4.2-1.

Table 3.4.2-1 Alternative Comparison Analysis

Criteria		Alternative 1	Alternative 2	Alternative 3
Technical Aspect	Length (km)	29.80	54.20	37.80
	Overpass	13	25	16
	Underpass	0	0	1
	Bridge	10	16	13
	Evaluation	[Better] The shortest length and minimal number of structures.	[Poor] The longest length and the largest number of structures.	[Fair] The length and the number of structures is fair comparing with the other.
Current Land Use	Agricultural area (m2)	1,430,400	2,574,500	1,852,200
	Settlement (m2)	44,700	54,200	18,900
	Roads and infrastructure (m2)	14,900	40,650	5,670
	Industrial estate (m2)	None	13,550	13,230
	Evaluation	[Fair] Although smallest agricultural and industrial area, settlement and industrial area is larger than the smallest	[Poor] Largest agricultural, settlement, road and infrastructures, and industrial area	[Better] Smallest settlement and roads and infrastructure while fair settlement and industrial area
Accessibility	Accessibility to surrounding development plan.	The route is far from industrial areas.	The route passes through near large industrial area	The route passes through the core of large industrial area.
	Accessibility to surrounding economic city	The route is not connecting to economic city.	The route is not connecting to economic city	The route connects Subang Smart City and Patimban Port directly.
	Evaluation	[Poor] No access to surrounding development plan and economic city	[Fair] Close industrial area but no economic city	[Better] Good connectivity to industrial area and economic city
Environmental Aspect	Protected area and protected forest area	None	None	None
	River crossing points	7	7	3
	Evaluation	[Fair] No protected area and forest area is on the footprint, but fair crossing points of river.	[Fair] No protected area and forest area is on the footprint, but fair crossing points of river.	[Better] No protected area and forest area is on the footprint, and less crossing points of river.
Social Aspect	Settlement Area (m2)	44,700	54,200	18,900
	Evaluation	[Fair] Fair area of settlement to be relocated.	[Poor] Largest area of settlement is required to be relocated.	[Better] smallest area of settlement is required to be relocated.
Evaluation		Not recommended - Shortest and simplest structures - Inconvenient	Not recommended - Largest area to be acquired in total and agricultural and settlement	Recommended - Fair length and number of structures. - Smallest

		<p>connection since no industrial area is close.</p> <ul style="list-style-type: none"> - Settlement area is comparatively large 	<p>area</p> <ul style="list-style-type: none"> - Number of structures (overpass and bridges) are the most, which leads to more cost, and technical difficulty, potential social and environmental impacts. 	<p>settlement area to be acquired</p> <ul style="list-style-type: none"> - Great accessibility to Subang Smart City and core of large industrial area
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Without Option

“Without option” is a case which new toll road is not constructed and existing roads are used. It does not alter land use, environmental nor social aspect so that there is no potential negative impact on various environment and social aspects, neither physical nor economical relocation. On the other hand, benefits of new road construction such as local development, increasing job opportunities, and devitalization of economy by connecting industrial and economic city and Patimban Port are not expected. It may also cause additional traffic loading on existing roads with a strong possibility since the new port has been constructed, which triggers other issues including severe traffic increase and quick road deterioration on existing roads.

3.4.3 Evaluation

Alternative 1 is the shortest length and simpler structures than the others, which leads to low cost, smaller land acquisition area and potential environmental impact. However, it is the largest settlement area to be acquired among three alternatives. It has more negative impact on social aspect. This route has also no connectivity with existing nor future industrial area and economic city which may bring economic benefit. Therefore, alternative 1 is less advantage than alternative 3 because of larger settlement area to be acquired and no connectivity to industrial area.

Alternative 2 is the longest length and largest agricultural and settlement area to be acquired than the others. The greatest numbers of structures are required which leads to more cost and technical difficulty. Although accessibility to industrial area is better than alternative 1, alternative 3 is likely to have the most potential social and environmental impacts. Thus, this alternative is not recommended.

Alternative 3 is fair length and simpler structures, advantage in minimal social and environmental impacts, and better accessibility to neighbor development plan. Especially, this route can minimize potential social impact as it is smallest settlement relocation. It also has easier accessibility to industrial and economical area, which might bring economical synergy effect. Alternative 3 is the most recommended in terms of smallest potential social impact and easier accessibility.

Comparing “without option” to alternative 3, without option does not cause on any environmental and social issues with constructing a road. However, constructing no new road and keeping on using existing ones may increase severe traffic and road deterioration.

As a result, Alternative 3 is reasonable to be selected in terms of the advantages in connectivity with industrial areas expected synergy effect, and minimizing social impacts caused by land acquisition.

This result of alternative analysis has been shared with DGH.

Chapter 4. Advice on Reviews of Natural Condition Survey

FS Review Team has conducted surveys for natural conditions including topographic and geotechnical surveys during the FS review process to reflect the results on designing and construction planning. Based on those natural condition survey results, following environmental and social considerations in terms of design and construction plan are specified. According to those considerations, the Technical Assistance confirmed that countermeasures were discussed and being addressed in the design and plan properly as shown in the right column of Table 4-1.

Table 4-1 Considerations and Countermeasures Based on the Result of Natural Condition Survey

No.	Considerations	Countermeasures
1	Selection of less environmental and social impact for borrowing pits and soil transportation routes	<ul style="list-style-type: none"> The borrowing pits will be chosen from licensed companies with environmental and operational certificates. The project executor confirms their licenses and the geological and environmental survey results.
2	Impact assessment and mitigation of land subsidence due to embankment.	<ul style="list-style-type: none"> The project area may possibly cause land subsidence due to compaction of sediments. FS consulting team is updating embankment heights depending on land stability based on geological survey. Embankment should be designed shorter (approx. 10m to 3m) and narrower considering environmental impact and complying with the national standard which limits subsidence to less than 10 cm per year. The impact to surrounding community due to land subsidence (consolidation or bumping) is not expected because sediment compaction by embankment occurs within ROW.

Chapter 5. Advice on Environmental and Social Considerations (EIA/AMDAL)

The AMDAL reports for the EIA of the Project were prepared by DGH through the consulting service of the Patimban Port, and submitted to the environmental agency of Subang Regency. Since DGH is required to satisfy JICA Guidelines in addition to the regulations of Indonesia for the environmental and social considerations, preparation of the AMDAL/EIA reports was supported by this Technical Assistance. The followings are the summary of the AMDAL/EIA reports with supplemental explanation made by the Technical Assistance to meet for JICA Guidelines.

5.1 Legislation for Environmental Considerations

5.1.1 Laws and Regulations in Indonesia

The EIA in Indonesia is called AMDAL (Analisis Mengenai Dampak Lingkungan). The laws and regulations related to AMDAL are listed in Table 5.1.1-1. The obligation of AMDAL is stipulated by the Law No.32/2009 concerning Environmental Protection and Management, the fundamental law in the environmental field. In addition, the regulation of the Minister of Environment and Forestry No. 4/2021 prescribes the scale of business and/or activity that must have an environmental impact analysis, environmental management effort and environmental monitoring effort or statement on environmental management and monitoring. The implementation procedure of AMDAL has been stipulated by the Government Regulation No.27/2012 and No.22/2021 as well as the ministerial regulations.

According to the Government Regulation No. 27/2012, AMDAL consist of the following three documents:

- KA-ANDAL (Kerangka Acuan Analisis Dampak Lingkungan): TOR for environmental impact assessment.
- ANDAL (Analisis Dampak Lingkungan): Environmental impact assessment report
- RKL (Rencana Pengelolaan Lingkungan) - RPL (Rencana Pemantauan Lingkungan): Environmental management plan and environmental monitoring plan

Table 5.1.1-1 Laws and Regulations Related to AMDAL

Category	Name
Law	- Law No.32/2009, Environmental Protection and Management
EIA (AMDAL)	- Government Regulation No.27/2012 about Environmental Permission, - Regulation of Minister of Environment No.16/2012 about Guidelines for Developing Environmental Documents - Regulation of Minister of Environment No.17/2012 about Guidelines for Community Engagement in the Impact Analysis Process for Environment and Environmental Permit - Regulation of Minister of Environment No.8/2013 about Procedure for Assessment and Examination of Environmental Documents and Issuance of Environmental Permit - Government Regulation No.22/2021 about Implementation of Environmental Protection and Management (Article 3-106 and Appendix 1- Appendix 5) - Regulation of Minister of Environment and Forestry No. 4/2021 about List of Businesses and/or Activities Mandatory for AMDAL, UKL-UPL and SPPL

5.1.2 Gap between Indonesian Laws and Regulations and JICA Guidelines

The differences between Indonesian Laws and JICA Guidelines are analyzed as table 5.1.2-1.

AMDAL reports developed based on the laws and regulations in Indonesia is generally poor in investigation and lack of data on social considerations. Several parts of requirement of JICA Guidelines such as gender consideration, social organizations, and conflict of interest are out of scope. In addition, only one public consultation held during scoping phase, and not in drafting final report phase and implementation phase of environment and social consideration as required in JICA Guidelines.

Considering the gaps, the Technical Assistance supported AMDAL/EIA report describing the results of those social study and holding public consultation at the drafting report stage.

Table 5.1.2-1 Gap Analysis

Item	JICA Guidelines	Law in Indonesia	Gap between JICA Guidelines and Law in Indonesia
Underlying Principles	- Environmental impacts that may be caused by projects must be assessed and examined in the earliest possible planning stage.	- Environmental Impact Assessment (AMDAL) and its approval acquisition from the environmental authority is required. (Law No.32/2009)	- There is no gap.
	- Alternatives or mitigation measures to avoid or minimize adverse impacts must be examined and incorporated into the project plan. (JICA Guidelines, Appendix 1.1)	- Alternatives are requested to be explained in KA- ANDAL (Ministry of Environment and Forest Regulation No.16/2012, Appendix I).	- Considering alternatives is not required in ANDAL.
Information Disclosure	- EIA reports (which may be referred to differently in different systems) must be written in the official language or in a language widely used in the country in which the project is to be implemented. - When explaining projects to local resident, written materials must be provided in a language and form understandable to them. - EIA reports are required to be made available to the local resident of the country in which the project is to be implemented. - The EIA reports are required to be available at all time for perusal by project stakeholders such as local residents and copying must be permitted. (JICA Guidelines, Appendix 2)	- AMDAL documents are made available to public throughout the reviewing process via public places and/or online. (Ministry of Environment and Forest Regulation No.17/2012, Law No.11/2020)	- There is not stipulation to use local languages. However, since Bahasa Indonesia is the common language for Indonesian people, there is not significant difference.
Public Consultation	- For projects with a potentially large environmental impact, sufficient consultations with local stakeholders, such as local resident, must be conducted via disclosure of information at an early stage, at which time alternatives for project plans may be examined. - The outcome of such consultations must be incorporated into the contents of project plans. (JICA Guidelines, Appendix 1, Social Acceptability.1) - In preparing EIA reports, consultations with stakeholders, such as local resident, must take place after sufficient information has been disclosed. Records of such	- AMDAL is carried out with affected communities involvement from planning, assessment, and review process. - Announcements to the communities for public consultation should be made using Indonesian language and such types of media as newspaper, notice boards, website, etc. (Ministry of Environment and Forest Regulation No.17/2012, Law No.11/2020)	- Public consultation during project implementation and monitoring stage is not held.

	<p>consultations must be prepared.</p> <ul style="list-style-type: none"> - Consultations with relevant stakeholders, such as local resident, should take place if necessary throughout the preparation and implementation stages of a project. Holding consultations is highly desirable, especially when the items to be considered in the EIA are being selected, and when the draft report is being prepared. <p>(JICA Guidelines, Appendix 2. EIA Reports for Category A Projects, Appendix 5. Consultation with Local Stakeholders□)</p>		
<p>Items to be assessed</p>	<ul style="list-style-type: none"> - The impacts to be assessed with regards to environmental and social considerations include impacts on human health and safety, as well as on the natural environment, that are transmitted through air, water, soil, waste, accidents, water usage, climate change, ecosystems, fauna and flora, including trans-boundary or global scale impacts. - These also include social impacts, including migration of population and involuntary resettlement, local economy such as employment and livelihood, utilization of land and local resources, social institutions such as social capital and local decision-making institutions, existing social infrastructures and services, vulnerable social groups such as poor and indigenous peoples, equality of benefits and losses and equality in the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases such as HIV/AIDS, and working conditions including occupational safety. (JICA Guidelines, Appendix 1. Scope of Impacts to Be Assessed.1) - In addition to the direct and immediate - impacts of projects, their derivative, secondary, and cumulative impacts as well as the impacts of projects that are indivisible from the project are also to be examined and assessed to a reasonable extent. It is also desirable that the impacts that can occur at any time throughout the project cycle should be 	<ul style="list-style-type: none"> - Following items are stipulated to be studied: <ul style="list-style-type: none"> a) geo-physical-chemical components, such as geological resources, soil, surface water, underground water, air, noise, and so on; b) biological components, such as vegetation/flora, fauna, ecosystem types, the presence of rare and/or endemic species and their habitats, and so on; c) socio-economic-cultural components, such as income level, demographics, livelihoods, local culture, archaeological sites, cultural sites and so on; d) public health components, such as changes in the level of public health. - (Regulation of Minister of Environment No.16/2012) - Both direct and indirect impacts are stipulated to be forecasted. - (Regulation of Minister of Environment No.16/2012) - Integrated study approach is requested if more than one project is interrelated in one stretch of ecosystem. - (Government Regulation No. 27/2012) 	<ul style="list-style-type: none"> - Social components to be studied under Indonesian regulation are limited and several items required by JICA Guidelines such as equality in the development process, gender, children's rights, local conflicts of interest are out of the scope.

	considered throughout the life cycle of the project. (JICA Guidelines, Appendix 1, Scope of Impacts to Be Assessed.2)		
Monitoring, Grievance	<ul style="list-style-type: none"> - Project proponents etc. should make efforts to make the results of the monitoring process available to local project stakeholders. (JICA Guidelines, Appendix 1, Monitoring.3) - When third parties point out, in concrete terms, that environmental and social considerations are not being fully undertaken, forums for discussion and examination of countermeasures are established based on sufficient information disclosure, including stakeholders' participation in relevant projects. - Project proponents etc. should make efforts to reach an agreement on procedures to be adopted with a view to resolving problems. (JICA Guidelines, Appen 1, Monitoring.4) 	<ul style="list-style-type: none"> - Environmental Management Plan and Environmental Monitoring Plan are required to be prepared as a part of AMDAL. - Monitoring results disclosure is not stipulated. (Law No. 32/2009, Law No.11/2020) 	Disclosing the monitoring results is gap.
Ecosystem and Biota	<ul style="list-style-type: none"> - Projects must not involve significant conversion or significant degradation of critical natural habitats and critical forests. 	<ul style="list-style-type: none"> - Environmental assessment process is required if a project is implemented in important ecosystem. (Law No.22/2021) - Development projects are not allowed to be implemented in conservation forests. (Law No. 41/1999) 	Limiting development in significant conversion or degradation of critical ecosystem other than conservation forests is not specified.
Indigenous Peoples	<ul style="list-style-type: none"> - Any adverse impacts that a project may have on indigenous peoples are to be avoided when feasible by exploring all viable alternatives. - When, after such an examination, avoidance is proved unfeasible, effective measures must be taken to minimize impacts and to compensate indigenous peoples for their losses. 	<ul style="list-style-type: none"> - No stiplation to assess impact on Indigenous poeple. - The governments are authorized to establish policies regarding procedures for recognizing the existence of indigenous peoples, local wisdom, and rights of indigenous peoples related to the protection and environmental management (Art. 68, No.11/2020) 	Examination of impact to indigenous people is gap.

5.2 Baseline Survey Results

The baseline survey conducted in the AMDAL/EIA study was summarized as follows.

5.2.1 Survey Methods

Data collection and analysis methods of the EIA study for the construction of the Patimban Access Toll Road were carried out based on several approaches, namely field survey, observation and data sampling, library research, free interviews and distributing structured questionnaires. Data collection details are shown as below.

Table 5.2.1-1 Survey Location and Date

NO	SURVEY ITEMS	NUMBER LOCATION	COORDINATE		ACTUAL SURVEY DATE
			Latitude	Longitude	
1	Air quality	5	107,6146925	-6,494999106	16/11/2021
			107,6117191	-6,469558559	17/11/2021
			107,6776626	-6,390080350	18/11/2021
			107,813592	-6,329028728	19/11/2021
			107,8615592	-6,280950851	20/11/2021
2	Noise	5	107,6146925	-6,494999106	16/11/2021
			107,6117191	-6,469558559	17/11/2021
			107,6776626	-6,390080350	18/11/2021
			107,813592	-6,329028728	19/11/2021
			107,8615592	-6,280950851	20/11/2021
3	Vibration	5	107,6146925	-6,494999106	16/11/2021
			107,6117191	-6,469558559	17/11/2021
			107,6776626	-6,390080350	18/11/2021
			107,813592	-6,329028728	19/11/2021
			107,8615592	-6,280950851	20/11/2021
4	Hydrology (river flow)	5	107,618927	-6,446803871	16/11/2021
			107,652392	-6,41848036	17/11/2021
			107,7369002	-6,350508428	18/11/2021
			107,8452834	-6,28800192	19/11/2021
			107,8634102	-6,280961958	20/11/2021
5	Soil Quality	5	107,6143208	-6,495673498	16/11/2021
			107,6792642	-6,39617096	17/11/2021
			107,714746	-6,375831106	18/11/2021
			107,7402002	-6,35269681	19/11/2021
			107,859755	-6,28479168	20/11/2021
6	Well Water Quality	4 at well or spring	-6.4478	107.61784	18/11/2021
			-6.6119	106.68234	19/11/2021
			-6.35283	107.73964	20/11/2021
			-6.32664	107.81283	21/11/2021
7	Surface Water Quality	5	107,618927	-6,446803871	18/11/2021
			107,652392	-6,41848036	19/11/2021
			107,7369002	-6,350508428	20/11/2021
			107,8452834	-6,28800192	21/11/2021
			107,8634102	-6,280961958	22/11/2021
8	Flora and Fauna	5	107,6150369	-6,497953741	18/11/2021
			107,6418919	-6,43243427	19/11/2021
			107,6802015	-6,394182858	20/11/2021
			107,8119877	-6,328885043	21/11/2021
			107,8597716	-6,284298003	22/11/2021
9	Aquatic Biota				18/11/2021- 21/11/2021
10	Social, Economic and Culture				16/11/2021- 25/11/2021

Source: Draft EIA Report

Samplings for ambient air quality, noise and vibration have been carried out by taking samples in the field and analyzing them in an accredited environmental laboratory. Location of measurement and sampling are as follows:

Table 5.2.1-2 Description of Sampling Location for Air Quality, Noise and Vibration

No.	Name of Monitoring Spots	Description
U1	Kotasari Village Settlement, Heritage Nagara S 06° 16' 49,308", E 107° 51' 45,168"	Residential areas affected by decreased air quality and increased noise
U2	Kertajaya Village Settlement, Tambak Dahan S 06° 19' 53,497" E 107° 49' 13,276"	Residential areas affected by decreased air quality and increased noise
U3	Jati Baru Village Settlement, Ciasem S 06° 21' 00,547" E 107° 44' 22,208"	Residential areas affected by decreased air quality and increased noise
U4	Pasir Bungur Village Settlement, Purwadadi 06° 23' 25,685" E 107° 40' 39,870"	Residential areas affected by decreased air quality and increased noise
U5	Kosar Village Settlement, Cipendeuy S 06° 26' 28,274" E 107° 37' 38,875"	Residential areas affected by decreased air quality and increased noise

Source: Draft EIA Report

Samplings for surface water quality have been carried out by taking samples in the field and analyzing them in an accredited environmental laboratory. Location of measurement and sampling are as follows:

Table 5.2.1-3 Description of Sampling Location for Surface Water Quality

No.	Name of Monitoring Spots	Description
AP1	River Water S 06° 16' 51,436" E 107° 51' 47,898"	Irrigation Channel Kotasari Village, Pusaka Nagara
AP2	River Water S 06° 16' 53,254" E 107° 49' 12,464"	Irrigation Channel Kertajaya Village, Tambak Dahan
AP3	River Water S 06° 21' 00,086" E 107° 44' 23,572"	Irrigation Channel Jatibaru Village, Ciasem
AP4	River Water S 06° 24' 19,881" E 107° 40' 57,347"	East Citarum River
AP5	River Water S 06° 26' 55,441" E 107° 37' 20,803"	Cibuang River

Source: Draft EIA Report

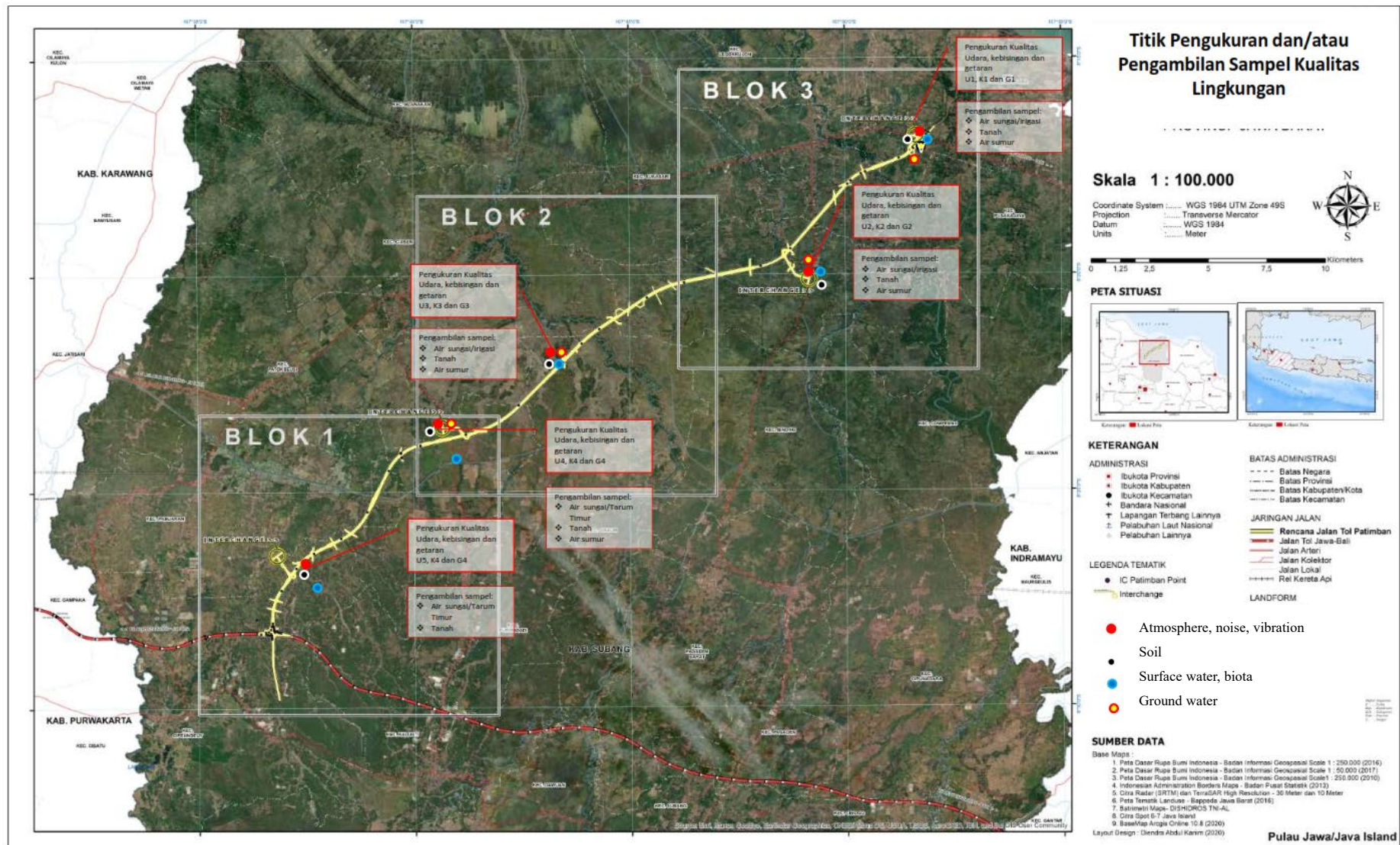
Samplings for ground water quality have been carried out by taking samples in the field and analyzing them in an accredited environmental laboratory. Location of measurement and sampling are as follows:

Table 5.2.1-4 Description of Sampling Location for Ground Water Quality

No.	Name of Monitoring Spots	Description
AS1	Pemukiman Desa Kotasari, Pusaka Nagara	S 06° 16' 49,407" E 107° 51' 44,873"
AS2	Pemukiman Desa Kertajaya, Tambak Dahan	S 06° 19' 53,492" E 107° 49' 13,271"
AS3	Pemukiman Desa Jati Baru, Ciasem	S 06° 21' 00,442" E 107° 44' 22,276"
AS4	Pemukiman Desa Pasir Bungur, Purwadadi	S 06° 23' 25,678" E 107° 40' 39,483"

Source: Draft EIA Report

Interview to five different types of persons (landowner, person live within 100m from the project site, farmer, trader, and other) in each affected village has conducted to collect information on social condition including economics and culture and complementary information for environmental conditions. To understand economic and social structure of villages deeply, in-depth interviews has been conducted to one head of village, one community /religious leader, one female youth of each village.



Source: Draft EIA Report

Figure 5.2.1-1 Map of Survey Location

5.2.2 Air Quality

A recapitulation of the results of on-site measurements (temperature, humidity, wind speed, wind direction, and weather) and laboratory analysis of ambient air is presented in Table 5.2.2-1.

The measurement results at all sampling points for all parameters are still below Indonesian quality standard Attachment VII Government Regulation of the Republic of Indonesia Number 22 of 2021 concerning Implementation of Environmental Protection and Management. For the parameters of Sulfur dioxide (SO₂), Carbon monoxide (CO), Nitrogen dioxide (NO_x) Photochemical oxygen (O_x) as Ozone (O₃), sampling was carried out for 1 hour, while the other parameters were carried out for 24 hours. Measurements for Ozone were carried out in the morning until 11 am. Hydrocarbons were measured in 3 hours.

Natural pollutant sources only contribute to the background concentration. In the study area, air pollution is mostly caused by the intensity of anthropogenic activities in rural areas and agricultural areas. Contaminants come mainly from motor vehicles and agricultural activities.

Table 5.2.2-1 Measurement Results and Laboratory Analysis of Ambient Air Quality

NO	PARAMETER	Measurement Time	Quality Standard *)	Unit	Result				
					U1	U2	U3	U4	U5
I	Physical								
	Temperature	-	-	°C	25 - 34	26 - 31	25 - 33	26 - 31	26 - 31
	Dominant Wind Direction From	-	-	-	South	East	South	South	West
	Humidity	-	-	%RH	60 - 86	64 - 81	25 - 33	64 - 81	64 - 81
	Wind Velocity	-	-	km/jam	0,8	0,8	0,7	0,8	0,8
	Weather	-	-	-	Cerah	Cerah	Cerah	Cerah	Cerah
II	Chemical								
1	Sulfur Dioksida (SO ₂) **)	1	150	µg/m ³	33	31	28	30	27
2	Carbon Monoksida (CO) **)	1	10.000	µg/m ³	3.838	3.700	3.616	3.666	3.593
3	Nitrogen Dioksida (NO ₂) **)	1	200	µg/m ³	29	27	25	26	24
4	Photochemical Oxydant (Ox) as Ozon (O ₃) **)	1	150	µg/m ³	40	41	43	42	40
5	Hidrokarbon Non Metana (NMHC) **)	3	160	µg/m ³	11	11	9	9	9
6	Partikulat debu < 100 µm (TSP) **)	24	230	µg/m ³	15	13	10	17	11
7	Partikulat debu < 10 µm (PM ₁₀) **)	24	75	µg/m ³	9	7	6	10	6
8	Partikulat debu < 2,5 µm (PM _{2,5}) **)	24	55	µg/m ³	5	4	4	6	3
9	Timbal (Pb) **)	24	2	µg/m ³	<0,01	<0,01	<0,01	<0,01	<0,01

Source: Draft EIA Report 2022

Note : *) PPRI No. 22 Tahun 2021. Lampiran VII

**) Parameters accredited by KAN No. LP-195-IDN

Under normal atmospheric conditions, the pressure (P) 1 atm and temperature (T) 25 oC

The method of determining the location has been accredited by KAN No. LP-195-IDN

5.2.3 Water Quality

(1) Surface water quality

Five location of irrigation canals and rivers, thirty-five parameters were analyzed including Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Dissolved Oxygen (DO) as well as Fecal Coliform and Total Coliform.

The results of background surface water quality around the project area show tendency of pollution caused by inflow of domestic wastewater. TSS, BOD, COD, and Coliforms exceeded the Indonesian Quality Standard at all locations. Other parameters including color, pH, Fe also exceeded the Standard at some locations. Specific results are shown below (Table 5.2.3-1).

Table 5.2.3-1 Result of Surface Water Quality Analysis

NO	PARAMETER	UNIT	STANDARD QUALITY *)	RESULT				
				AP1	AP2	AP3	AP4	AP5
A.	PHYSIC							
1	Temperature (In situ **)	oC	Udara $\pm 3^{\circ}\text{C}$	29	29	29	30	29
2	Total Dissolved Solids (TDS **)	mg/L	1.000	204	133	162	162	75
3	Total Suspended Solids (TSS **)	mg/L	40	1.330	95	117	46	58
4	Color	TCU	15	9	20	22	3	19
5	Rubbish	-	Nihil	Nihil	Nihil	Nihil	Nihil	Nihil
B.	CHEMICAL							
1	Acidity (pH) (in situ **)	-	6-9	6,1	5,9	6,2	6,5	6,3
2	Biochemical Oxygen Demand (BOD **)	mg/L	2	24	13	14	10	11
3	Chemical Oxygen Demand (COD **)	mg/L	10	59	43	43	37	39
4	Dissolved Oxygen (DO) In situ **)	mg/L	6	6,4	6,2	6,2	6,8	6,3
5	Sulfate (SO ₄) **)	mg/L	300	70	44	74	63	13
6	Chloride (Cl) **)	mg/L	300	12	17	17	17	4
7	Nitrate (as N) **)	mg/L	10	0,2	0,2	0,2	1	0,9
8	Nitrite (as N) **)	mg/L	0,06	<0,002	0,08	<0,002	<0,002	0,2
9	Ammonia (as N) **)	mg/L	0,1	<0,03	<0,03	<0,03	<0,03	<0,03
10	Total Nitrogen **)	mg/L	15	4	4	4	4	5
11	Total phosphate (total P) **)	mg/L	0,2	0,19	0,08	0,09	0,1	0,16
12	Fluoride (F) **)	mg/L	1	<0,01	<0,01	<0,01	0,03	<0,01
13	Sulfur as H ₂ S **)	mg/L	0,002	<0,002	<0,002	<0,002	<0,002	<0,002
14	Cyanide (CN) **)	mg/L	0,02	<0,006	<0,006	<0,006	<0,006	<0,006
15	Free Chlorin (Cl ₂) **)	mg/L	0,03	0,01	0,01	0,01	0,02	0,01
16	Dissolved Barium (Ba) **)	mg/L	1,0	0,02	0,05	0,03	0,02	0,02
17	Dissolved Boron (B) **)	mg/L	1,0	0,04	0,04	0,04	0,04	<0,02
18	Dissolved Mercury Terlarut (Hg)	mg/L	0,001	<0,0005	<0,0005	<0,0005	<0,0005	<0,0005
19	Dissolved Arsenic (As) **)	mg/L	0,05	<0,0003	<0,0003	<0,0003	<0,0003	<0,0003
20	Dissolved Selenium (Se)	mg/L	0,01	<0,0004	<0,0004	<0,0004	<0,0004	<0,0004

NO	PARAMETER	UNIT	STANDARD QUALITY *)	RESULT				
				AP1	AP2	AP3	AP4	AP5
21	Dissolved Iron (Fe) **)	mg/L	0,3	2	0,7	0,2	0,05	0,7
22	Dissolved Cadmium (Cd) **)	mg/L	0,01	<0,0006	<0,0006	<0,0006	<0,0006	<0,0006
23	Dissolved Cobalt (Co) **)	mg/L	0,2	0,002	<0,0007	<0,0007	0,001	<0,0007
24	Dissolved Manganese (Mn) **)	mg/L	0,1	0,01	0,006	0,01	0,02	0,01
25	Dissolved Nickel (Ni) **)	mg/L	0,05	<0,004	<0,004	<0,004	<0,004	<0,004
26	Dissolved Zinc (Zn) **)	mg/L	0,05	0,004	0,001	0,0008	0,004	0,001
27	Dissolved Copper (Cu) **)	mg/L	0,02	<0,005	<0,005	<0,005	<0,005	<0,005
28	Dissolved Lead (Pb) **)	mg/L	0,03	<0,009	<0,009	<0,009	<0,009	<0,009
29	Hexavalent Chromium (Cr VI) **)	mg/L	0,05	<0,004	<0,004	<0,004	<0,004	<0,004
30	Oil & Fat	mg/L	1	<0,2	<0,2	<0,2	<0,2	<0,2
31	Detergent **)	mg/L	0,2	<0,05	<0,05	<0,05	<0,05	<0,05
32	Phenol **)	mg/L	0,002	<0,001	<0,001	<0,001	<0,001	<0,001
33	Aldrin + Dieldrin	µg/L	17	<0,05	<0,05	<0,05	<0,05	<0,05
C.	MICROBIOLOGY							
1	<i>Fecal coliform</i> **)	MPN/100mL	100	3.100	2.200	3.100	220	2.200
2	<i>Total coliform</i> **)	MPN/100mL	1.000	4.300	2.700	4.300	270	2.700

Source: Laboratory Results of PT. PRIMARY UNILAB. December 14, 2021

Note: *) PPRI No. 22 Tahun 2021. Annex VI Table I (Class I)

***) Parameters Accredited by KAN No. LP-195-IDN

The Sampling Method has been accredited by KAN No. LP-195-IDN

Yellow highlighted values indicate exceedance of quality standard.

(2) Groundwater Quality

Four location of irrigation canals and rivers, twenty-eight parameters were analyzed including dissolved solids (TDS), pH, nutrition, heave metals and coliforms.

Except one point (AS1), all parameters are satisfying the Indonesian Quality Standard, PRI No. 22 of 2021. Appendix VI Table I (Class I), in the other three locations. At AS1, namely in the Kotasari Village Settlement, Pusaka Nagara, three parameters have exceeded the quality standard. Parameters that have exceeded are: Dissolved solids (TDS), total hardness (CaCO₃) and Manganese (Mn). Detail results are shown as below:

Table 5.2.3-2 Result of Surface Water Quality Analysis

NO	PARAMETER	UNIT	QUALITY STANDARDS*	RESULTS			
				AS1	AS2	AS3	AS4
A.	PHYSIC						
1	Turbidity **)	NTU	25	0,7	0,8	0,3	1
2	Color **)	TCU	50	<1	12	<1	<1
3	Dissolved Solids (TDS) **)	mg/L	1.000	1.120	304	519	214
4	Temperature (insitu **)	°C	± 3 °C	27	28	27	28
5	Flavor **)	-	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
6	Smell (insitu **)	-	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
B.	CHEMICAL						
1	pH (insitu **)	-	6,5 – 8,5	7	6	7	6,3
2	Iron (Fe) **)	mg/L	1	0,02	0,09	<0,004	0,07
3	Fluoride (F) **)	mg/L	1,5	0,3	0,3	<0,01	<0,01
4	Total Hardness (CaCO ₃) **)	mg/L	500	520	6	86	89
5	Manganese (Mn) **)	mg/L	0,5	0,57	0,004	0,1	0,49
6	Nitrate (NO ₃ -N) **)	mg/L	10	<0,1	<0,1	<0,1	<0,1
7	Nitrite (NO ₂ -N) **)	mg/L	1	<0,002	<0,002	<0,002	<0,002
8	Cyanide (CN) **)	mg/L	0,1	<0,006	<0,006	<0,006	<0,006
9	Anionic Surfactants (MBAS) **)	mg/L	0,05	<0,05	<0,05	<0,05	<0,05
10	Mercury (Hg)	mg/L	0,001	<0,0005	<0,0005	<0,0005	<0,0005
11	Arsenic (As)	mg/L	0,05	<0,0003	<0,0003	<0,0003	<0,0003
12	Cadmium (Cd) **)	mg/L	0,005	<0,0006	<0,0006	<0,0006	<0,0006
13	Hexavalent Chromium (Cr VI) **)	mg/L	0,05	<0,004	<0,004	<0,004	<0,004
14	Selenium (Se)	mg/L	0,01	<0,0004	<0,0004	<0,0004	<0,0004
15	Zinc (Zn) **)	mg/L	15	0,007	<0,0006	<0,0006	<0,0006

NO	PARAMETER	UNIT	QUALITY STANDARDS*	RESULTS			
				AS1	AS2	AS3	AS4
16	Sulfate (SO ₄ **)	mg/L	400	388	65	357	40
17	Lead (Pb **)	mg/L	0,05	<0,009	<0,009	<0,009	<0,009
18	Permanganate Value (KMnO ₄ **)	mg/L	10	4	2	2	1
19	Total Pesticide	mg/L	0,1	<0,00005	<0,00005	<0,00005	<0,00005
20	Benzene	mg/L	0,01	<0,0001	<0,0001	<0,0001	<0,0001
C. MICROBIOLOGY							
1	Total coliform **)	CFU/100 mL	50	15	17	8	13
2	E. coli **)	CFU/100 mL	0	0	0	0	0

Source: Draft EIA Report

Note: *) = PPRI No. 22 Tahun 2021. Annex VI Table I (Class I)

**) = Parameters Accredited by KAN No. LP-195-IDN

The Sampling Method has been accredited by KAN No. LP-195-IDN

5.2.4 Noise and Vibration

Noise and vibration level have been measured at five residential areas same as air quality shown in Table 5.2.1-2. Background level results are shown in Table 5.2.4-1.

Most of noise level is slightly below 55 dBA and U5 was measured 55dBA, the quality standard according to the Decree of the Minister of Environment No. 48 of 1996 concerning Noise Level Standards with residential designation. The level of vibration is below 10 mm/s, the quality standard according to Decree of the Minister of Environment No. 49 of 1996 concerning the Vibration Level Standard, Appendix IV, Decree of the State Minister of the Environment No. 49 of 1996 concerning the Standard for Vibration (Shock) Levels.

The sources of noise and vibration are from residential activities (e.g. prayers and markets), industrial support activities, and vehicles movements.

Table 5.2.4-1 Noise and Vibration Level

Parameter	U1	U2	U3	U4	U5	Quality Standard *)	Unit
Noise (lsm)	52	53	45	53	55	55	dBA**)
Vibration	0.015	0.008	0.009	0.01	0.009	10	mm/s

Source: Draft EIA Report

Note: *)Noise Quality Standard KepMen LH No. 48 of 1996 concerning Noise Level Standards. Vibration Quality Standard KepMen LH No. 49 of 1996 concerning Building Vibration Level Standards for in good technical condition, there are minor damages such as cracked plaster

**) The Day And Night Noise Level (Lsm) And Vibration

5.2.5 Ecosystem

Studied biological components are flora, fauna and aquatic biota which may be affected by the planned construction of the Patimban toll access road. Following sections explains the baseline survey results of the biological environment in the alignment route and around the planned toll road.

(1) Land Flora

a) Cultivated Vegetation

The description of the presence of terrestrial flora at the site of the planned construction of the Patimban Access Toll Road and the surrounding area, shows that at present it is in the form of technically irrigated rice fields, community-owned fields and mixed gardens (farms), sugarcane plantations and rubber plantations. The most common types of vegetation are cultivated plants.

The main types of cultivated plants are rice, vegetables and secondary crops, sugarcane and rubber. On land with a concave topography and a water catchment area as a wetland, most of the community made them into paddy fields. Those paddy fields are the habitat of certain wild animals.

Table 5.2.5-1 Types of Cultivated Vegetation Around the Patimban Access Toll Road Route

No.	Indonesian Name	Scientific Name
A	Vegetable And Fruit Crops	
1	Alpukat	<i>Persea americana</i>
2	Bayam	<i>Amaranthus spp</i>
3	Belimbing	<i>Averrhua carambola</i>
4	Bengkoang	<i>Pachyrhizus erosus</i>
5	Berenuk (Maja)	<i>Aegle marmelos</i>
6	Buah naga	<i>Hylocereus polyrhizus</i>
7	Cabe	<i>Capsicum anuum</i>
8	Cempedak	<i>Arthocarpus campedens</i>
9	Durian	<i>Duria zibethinus</i>
10	Hanjuang beureum/Andong merah	<i>Cordyline fruticosa</i>
11	Jagung	<i>Zea mays</i>
12	Jambu air	<i>Shirigium Aquae</i>
13	Jambu batu/biji	<i>Psidium guajava</i>
14	Jambu bol	<i>Eugenia malaccensis</i>
15	Jambu mete	<i>Anacardium occidentale</i>
16	Jeruk bali	<i>Citrus maxima</i>
17	Kacang panjang	<i>Vigna unguiculata sesquipedalis</i>
18	Kacang tanah	<i>Arachis hypogaea</i>
19	Kangkung	<i>Ipomoea aquatica</i>
20	Karet	<i>Hevea brasiliensis</i>
21	Kedondong	<i>Spondias dulcis</i>
22	Kelapa	<i>Cocos nucifera</i>
23	Kelor	<i>Moringa oleoifera</i>
24	Kemiri	<i>Aleuritas molucana</i>
25	Ketimun	<i>Cucumis sativus</i>
26	Lansat	<i>Lansium domesticum</i>
27	Mangga	<i>Mangifera indiacae</i>
28	Manggis	<i>Garcinia mangostana</i>
29	Nangka	<i>Arthocarpus sp</i>
30	Nenas	<i>Ananas comosus</i>
31	Padi	<i>Oryza sativa</i>
32	Pepaya	<i>Carica papaya</i>
33	Petai	<i>Parkia speciosa</i>
34	Pisang	<i>Musa paradisiaca</i>
35	Rambai	<i>Baccaurea motleyana</i>
36	Rambutan	<i>Nephelium Lappaceum</i>
37	Saga pohon	<i>Abrus pracatorius</i>
38	Sawi	<i>Brassica rapa</i>
39	Sawo	<i>Manilkara zapota</i>
40	Srikaya	<i>Annona squamosa</i>

No.	Indonesian Name	Scientific Name
41	Sereh	<i>Cymbopogon citratus</i>
42	Sukun	<i>Artocarpus communis</i>
43	Talas	<i>Alocacia bantamensis</i>
44	Tangkil	<i>Gnetum gnemon</i>
45	Tebu	<i>Saccharum spontaneum</i>
46	Tomat	<i>Solanum lycopersicum</i>
47	Ubi jalar	<i>Dioscorea alata</i>
48	Ubi kayu	<i>Manihot esculenta</i>
B	Protective Plant	
1	Akasea mangium	<i>Acacia mangium</i>
2	Akasea daun panjang	<i>Acacia auriculiformis</i>
3	Angsana	<i>Pterocarpus indicus</i>
4	Bambu tali/Bambu apus	<i>Gigantochloa apus</i>
5	Bambu kuning kecil	<i>Bambusa vulgaris</i>
6	Beringin	<i>Ficus benyamina</i>
7	Bunga kupu kupu	<i>Bauhinia purpurea</i>
8	Bintaro	<i>Cerbera manghas</i>
9	Cemara laut	<i>Casuarina equisetifolia</i>
10	Jabon putih	<i>Anthocephalus cadamba</i>
11	Jabon merah	<i>Anthocephalus macrophyllus</i>
12	Johar	<i>Cassia seamea</i>
13	Karet kebo/kerbau	<i>Ficus elastica</i>
14	Ketapang	<i>Terminalia catappa</i>
15	Mahoni	<i>Switenia mahagoni</i>
16	Sengon	<i>Albazia falcataria</i>
17	Tanjung	<i>Mimosops elengi</i>
18	Jati	<i>Tectona grandis</i>
19	Randu	<i>Ceiba pentandra</i>
20	Salam	<i>Syzygium polyanthum</i>
C	Decorative Plants	
1	Bidara	<i>Ziziphus mauritiana</i>
2	Bougenvil	<i>Bougenvilla spectabilis</i>
3	Bunga kana	<i>Canna hybrida</i>
4	Handeuleum	<i>Graptophyllum pictum</i>
5	Keji beling	<i>Stachytarpheta mutabilis</i>
6	Kembang sepatu	<i>Hibiscus rosasinesis</i>
7	Lidah buaya	<i>Aloe vera</i>
8	Mawar	<i>Rosa sinensis</i>
9	Nusa indah	<i>Mussaenda pubescens</i>
10	Pacar air	<i>Impatiens balsamina</i>
11	Palem kuning	<i>Chrysalidocarpus lutescens</i>
12	Soka	<i>Ixora javanica</i>
13	Suji	<i>Pleomele torvum</i>
14	Anting-anting/Teh-tehan	<i>Acalypha indica</i>

Source: Draft EIA Report 2022.

b) Natural Vegetation

The types of natural vegetation found on the Patimban port access toll road site include reeds, babadotan, carulang, gewor and others. Following species of natural vegetation around the project area are observed and/or reported by interview.

Table 5.2.5-2 Types of Natural Vegetation Around the Project Area

No.	Indonesian Name	Scientific Name	Status	
			P.106/2018	IUCN
1	Alang alang	<i>Imperata cylindrica</i>	Not protected	--
2	Babadotan	<i>Ageratum conyzoides</i>	Not protected	--
3	Bayem bayeman	<i>Amaranthus spinosus</i>	Not protected	--
4	Carulang/Belulang	<i>Eleusine indica</i>	Not protected	--
5	Gewor/Tali said	<i>Alternanthera sessilis</i>	Not protected	--
6	Harendong	<i>Melastoma affine</i>	Not protected	--
7	Hareuga	<i>Bidens pilosa</i>	Not protected	--
8	Jajagoan leutik	<i>Echinochloa colonum</i>	Not protected	--
9	Jarong	<i>Stachytarpetia indica</i>	Not protected	--
10	Jombang	<i>Emilia sonchifolia</i>	Not protected	--
11	Jukut awi	<i>Lophatherum gracile</i>	Not protected	--
12	Jukut kebo	<i>Euphorbia hirta</i>	Not protected	--
13	Jukut pait	<i>Paspalum conjugatum</i>	Not protected	--
14	Jukut riut	<i>Mimosa pudica</i>	Not protected	--
15	Kakawatan	<i>Cynodon dactylon</i>	Not protected	--
16	Kiurat	<i>Plantago asiatica</i>	Not protected	--
17	Kirinyuh	<i>Chromolaena odorata</i>	Not protected	--
18	Kitolot	<i>Isotoma longiflora</i>	Not protected	--
19	Papayungan	<i>Cyperus halpan</i>	Not protected	--
20	Sadagori	<i>Sida retusa</i>	Not protected	--
21	Saliara	<i>Lantana camara</i>	Not protected	--
22	Sintrong	<i>Crassocephalum crepidioides</i>	Not protected	--
23	Sembung	<i>Blumea balsamifera</i>	Not protected	--
24	Tampuyung	<i>Sonchus arvensis</i>	Not protected	--
25	Tapak liman	<i>Elephantopus scaber</i>	Not protected	--
26	Teki	<i>Cyperus rotundus</i>	Not protected	--

Source: Draft EIA Report 2022.



Technical Irrigation on Rice Field



Mixed Fields and Gardens



Sugarcane Plantation

Source: Draft EIA Report 2022.

Figure 5.2.5-3. Types of Vegetation on the Project Area

c) Land Fauna

Wildlife species have been found and/or reported by interview on agricultural land and community plantations include coconut squirrels (*Callosciurus notatus*), civets (*Paradoxurus hemaphroditus*), and rats. The most species found were rats. Cultivated animals found in the planned location of the Patimban Access toll road are goats, sheep, chickens, ducks, cows, and buffalo. There is no rare nor protected species by Indonesian law. Wildlife species found and/or reported by interview are presented in Table 5.2.5-3.

Table 5.2.5-3 Types of wildlife around The Project Area

No.	Indonesian Name	Scientific Name	Status		
			P.106/2018	IUCN	Migration
Mammals					
1	Garangan	<i>Herpestes javanicus</i>	<i>Not Protected</i>	LC	No
2	Codot krawar	<i>Cynopterus brachyotis</i>		LC	
3	Kelelawar ladam menengah	<i>Rhinolophus affini</i>	<i>Not Protected</i>	LC	No
4	Kelelawar kecil	<i>Pipistrellus tenuis</i>		LC	
5	Musang	<i>Paradoxurus hemaphroditus</i>	<i>Not Protected</i>	LC	No
6	Tikus	<i>Rattus rattus</i>	<i>Not Protected</i>	LC	No
7	Bajing kelapa	<i>Callosciurus notatus</i>	<i>Not Protected</i>	LC	No
8	Tupai kekes	<i>Tupaia javanica</i>	<i>Not Protected</i>	LC	No
Aves					
1	Prenjak	<i>Prinia familiaris</i>	<i>Not Protected</i>	NT	No
2	Burung madu sriganti	<i>Nectarinia jugularis</i>	<i>Not Protected</i>	LC	No
5	Bondol jawa	<i>Lonchura leucogastroides</i>	<i>Not Protected</i>	LC	No
6	Burung gereja	<i>Passer montanus</i>	<i>Not Protected</i>	LC	No
7	Layang-layang	<i>Hirundo rustica</i>	<i>Not Protected</i>	LC	No
8	Walet sriti	<i>Collocalia esculenta</i>	<i>Not Protected</i>	LC	No
9	Cucak Kutilang	<i>Pycnonotus aurigaster</i>	<i>Not Protected</i>	LC	No
10	Blekok sawah	<i>Ardeola speciosa</i>	<i>Not Protected</i>	LC	No
12	Kuntul perak	<i>Egretta intermedia</i>	<i>Not Protected</i>	--	No
13	Kuntul kecil	<i>Egretta garzetta</i>	<i>Not Protected</i>	LC	No
1	Biawak	<i>Varanus salvator</i>	<i>Not Protected</i>	LC	No
2	Bunglon	<i>Bronchocela jubata</i>	<i>Not Protected</i>	LC	No

No.	Indonesian Name	Scientific Name	Status		
			P.106/2018	IUCN	Migration
3	Cecak kayu	<i>Hemidactylus frenatus</i>	<i>Not Protected</i>	LC	No
4	Kadal	<i>Mabuya multifasciata</i>	<i>Not Protected</i>	LC	No
5	Katak sawah	<i>Fejervarya cancrivora</i>	<i>Not Protected</i>	LC	No
6	Kodok buduk	<i>Duttaphrynus melanostictus</i>	<i>Not Protected</i>	LC	No
7	Kura-kura	<i>Tryonix cartilagineus</i>	<i>Not Protected</i>	--	No
8	Tokek	<i>Gekko gecko</i>	<i>Not Protected</i>	LC	No
9	Ular Air	<i>Humalopsis buccata</i>	<i>Not Protected</i>	--	No

Source: Draft EIA Report 2022.

Note: P.106/2018= Minister of Environment and Forestry Regulation No. P.106 of 2018 concerning the Second Amendment to Permen LHK No. P.20/Menlhk/Setjen/KUM.1/6/2018 concerning Protected Types of Plants and Animals.

IUCN, IUCN Red List Version 2021-3, namely VU: Vulnerable, LC: Least Concern; NT: Near Threatened; CITES, CITES valid from 14 February 2021, namely I= Appendix I, II= Appendix II, III= Appendix III

(2) Aquatic Biota

a) Plankton

The life of plankton is very dependent on the physical and chemical water quality conditions. Water pollution will be a limiting factor for the life of aquatic biota. Plankton are biota that float in the water and their movement is more dependent on currents and based on their way of life. plankton consists of phytoplankton and zooplankton. Phytoplankton (microorganisms) are aquatic plants that are free to float and drift in water and are able to carry out photosynthesis, which is able to convert nutrients into energy-rich organic compounds.

The position of phytoplankton in the food chain as a primary producer is the basis of food webs. In aquatic ecosystems, zooplankton are primary consumers which are very influential on the presence of phytoplankton, there is a unidirectional relationship between zooplankton and phytoplankton, zooplankton will eat phytoplankton which is called grazing.

b) Phytoplankton

The results of the analysis of aquatic biota taken from 5 observation stations, especially related to phytoplankton, obtained 4 classes, namely Chlorophyta, chrysophyta, Cynaophyta, and Euglenophyta. The results of laboratory identification are as follows:

Table 5.2.5-4 Results of Laboratory Identification of The Abundance of Phytoplankton At 5 Observation Stations

NO	Species	P1	P2	P3	P4	P5
CHLOROPHYTA						
1	<i>Pediastrum sp.</i>				2	1
CHRYSOPHYTA						
2	<i>Diatoma sp.1</i>	4		8	3	
3	<i>Diatoma sp.2</i>	6	4	12	4	18
4	<i>Diatomella sp.</i>	3	3	11	5	3
5	<i>Fragillaria sp.1</i>	4			4	
6	<i>Fragillaria sp.2</i>		3	11	3	25
7	<i>Frustulia sp.</i>			4	2	
8	<i>Navicula sp.1</i>			17	8	4
9	<i>Navicula sp.2</i>	8	5	39	27	14

NO	Species	P1	P2	P3	P4	P5
10	<i>Nitzschia sp.</i>			2	2	
11	<i>Pinnularia sp.1</i>	3				
12	<i>Pinnularia sp.2</i>			14	4	3
13	<i>Pleurosigma sp.1</i>	3	4		7	4
14	<i>Pleurosigma sp.2</i>				2	4
15	<i>Pleurosigma sp.3</i>				1	
16	<i>Pleurosigma sp.4</i>				3	2
17	<i>Surirella ovalis</i>				3	
18	<i>Synedra sp.</i>	3	5	23	17	13
19	<i>Tabellaria sp.</i>			4		
CYANOPHYTA						
20	<i>Anabaena sp.</i>				9	
21	<i>Oscillatoria sp.</i>			6	8	6
22	<i>Spirulina sp.</i>	2				
23	CYANOPHYTA	5			2	1
EUGLENOPHYTA						
24	<i>Euglena sp.1</i>		2	6	4	3
25	<i>Euglena sp.2</i>			2		
26	<i>Phacus sp.</i>			4	5	3
Number of Individual/ L		41	26	163	125	104
Number of Taxa		10	7	15	22	15
Diversity Index $H' = - \sum p_i \log_2 p_i$ (SHANNON - WIENER, 1949)		3,21	2,75	3,45	3,94	3,31
H-max = $\log_2 S$		3,32	2,81	3,91	4,46	3,91
Equitabilitas (E) = $H'/H\text{-max}$		0,97	0,98	0,88	0,88	0,85

Source: Draft EIA Report 2022.

Note: P1= Irrigation channel in Patimban Village, Pusaka Nagara (06o16'51,44"LS – 107o51'47,89"BT)
P2= Irrigation channel in Kertajaya Village, Tambak Dahan (06o19'53,49"LS – 107o49'13,28"BT)
P3= Irrigation canal in Jatibaru Village, Ciasem (06o21'0.9"LS – 107o44'23.57"BT)
P4= East Citarum irrigation canal (06o24'19.88"LS – 107o40'57.35"E)
P5= Cibuang River (06o26'55,44"LS – 107o37'20,80"E)

Based on the results of the laboratory analysis in the table above, the diversity (Diversity index) of phytoplankton at 5 observation points is at a value below 3 (2.75) at the P2 observation point while other observation points are at a value above 3 (3.21 – 3.94). The value of diversity (Diversity index) of phytoplankton <3 indicates that the location is included in the category of "lightly polluted" irrigation canals, such as at the observation point P2. At the location points P1, P3, P4, and P5 with each diversity value (Diversity Index) > 3 then the location is included in the category of irrigation canals or rivers "very lightly polluted" or "unpolluted". Based on Odum (1998), the species uniformity index (E) at each observation point is high because the overall value is >0.6 (0.85 to 0.98).

c) Zooplankton

Observations have been made on the points of irrigation channels and river channels around the location of the Patimban Toll Road. The results of observations at these points are available in the following table.

Table 5.2.5-5 Zooplankton Identification Results

NO	INDIVIDU	P1	P2	P3	P4	P5
	ARTRHOPODA					
	CRUSTACEA					
1	COPEPODA copepodite				1	
2	COPEPODA nauplius	5				
	PROTOZOA					
	CILIOPHORA					
3	EUPLOTIDAE			2	3	
4	CILIOPHORA		5			
	FLAGELLATA					
5	FLAGELLATA		4	4	3	2
	HELIOZOA					
6	<i>Actynophrys sol</i>					2
	RHIZOPODA					
7	<i>Arcella sp.</i>				5	3
8	<i>Hyalosphenia sp.</i>	17	21	19	19	13
	TROCHELMINTHES					
	ROTATORIA					
9	<i>Trichoserca sp.</i>	1				
	Number of Individual/ L	23	30	25	31	20
	Number of Taxa	3	3	3	5	4
	Diversity Index $H' = - \sum p_i \log_2 p_i$ (SHANNON - WIENER, 1949)	1,00	1,18	1,02	1,67	1,48
	H-max = $\log_2 S$	1,58	1,58	1,58	2,32	2,00
	Equitabilitas (E) = $H'/H\text{-max}$	0,63	0,74	0,64	0,72	0,74

Source: Draft EIA Report 2022.

Note: P1= Irrigation channel in Patimban Village, Pusaka Nagara (06o16'51,44"LS – 107o51'47,89"BT)
P2= Irrigation channel in Kertajaya Village, Tambak Dahan (06o19'53,49"LS – 107o49'13,28"BT)
P3= Irrigation canal in Jatibaru Village, Ciasem (06o21'0,9"LS – 107o44'23,57"BT)
P4= East Citarum irrigation canal (06o24'19,88"LS – 107o40'57,35"E)
P5= Cibuang River (06o26'55,44"LS – 107o37'20,80"E).

The abundance of zooplankton is highly dependent on the number of phytoplankton because phytoplankton is food for zooplankton (Arinardi et al., 1997). Based on the results of the analysis on zooplankton, the Diversity index of zooplankton at 5 observation points is at a value above 1 (1.00 to 1.67). The index value shows that the zooplankton diversity index at the observation points belongs to the medium diversity category ($1 < H' < 3$). Based on Odum (1998), the species diversity index value is grouped into 3, namely low diversity if $H' < 1$, moderate diversity if H' is between 1 and 3, and high diversity if $H' > 3$.

The Similarity Index (Equitability Index) is in the range of 0.63 to 0.74. Based on Odum's (1998) criteria, the uniformity index (E) includes high uniformity criteria ($E > 0.6$). This is in accordance with the high uniformity of phytoplankton. This shows that there is a correlation between the presence of phytoplankton and the presence of zooplankton in the waters.

d) Benthos

In aquatic ecosystems benthos acts as a decomposer of organic materials found on the bottom or in the waters, so that it can be used as a biological indicator in the event of water pollution. Based on their sensitivity to pollution due to organic matter, benthos can be grouped into intolerant, facultative and tolerant groups.

Table 5.2.5-6 Benthos Identification Results

NO	INDIVIDUAL	B1	B2	B3	B4	B5
	ANNELIDA					
	OLYGOCHAETA					
1	<i>Branchiura sowerbyii</i>					261
2	<i>Dero sp.</i>					144
3	<i>Nais sp.</i>	27	9	135		558
4	OLYGOCHAETA			27		1.287
	ARTRHPODA					
	INSECTA					
	DIPTERA					
5	Ceratophogonidae	54	36		18	27
6	Chironomidae	36	27	279	135	1.008
7	DIPTERA (pupa)	54	27		36	
	MOLLUSCA					
	BIVALVIA					
8	<i>Corbicula sp.</i>			63		27
	GASTROPODA					
9	<i>Melanoides sp.</i>			9		
10	<i>Phila sp.</i>			9		
	NEMATHELMINTHES					
11	NEMATODA 1				99	
12	NEMATODA 2	558	495	234	288	
	Number of Individual/ m ²	729	594	756	576	3.312
	Number of Taxa	5	5	7	5	7
	Diversity Index H' = - ∑ pi log2pi (SHANNON - WIENER, 1949)	1,24	0,96	2,12	1,83	2,08
	H-max = log2S	2,32	2,32	2,81	2,32	2,81
	Equitabilitas (E) = H'/H-max	0,53	0,41	0,76	0,79	0,74

Source: Draft EIA Report 2022.

e) Nekton

From interviews with local residents, an overview of the presence of fish and the like in rivers in the study area was obtained. Various types of fish that have high economic value are also part of the livelihoods of the local population, which is indicated by the activities of fishermen who catch fish. The catch found in rivers in the study area is a common type of fish in West Java and no endemic fish species are found. Types of fish caught by residents both in rivers and in rice fields can be presented in Table 5.1.5-7.

Table 5.2.5-7 Types of Rivers and Rice Field Fish Found in The Study Area

No.	NAME	SCIENTIFIC NAME	Protection Status			
			P.106/2018	IUCN	CITES	Migration
1	Silver barb	<i>Barbonymus gonionotus Bleekcer</i>	Not Protected	LC	No	No
2	Walking catfish	<i>Clarias batrachus</i>	Not Protected	LC	No	No

No.	NAME	SCIENTIFIC NAME	Protection Status			
			P.106/2018	IUCN	CITES	Migration
3	Giant mottled eel	<i>Anguilla marmorata</i>	Not Protected	LC	No	No
4	Mozambique tilapia	<i>Oreochromis mossambicus</i>	Not Protected	VU	No	No
5	Carp	<i>Cyprinus carpio</i>	Not Protected	VU	No	No
6	Channa striata	<i>Channa striata</i>	Not Protected	LC	No	No
7	Rasbora aprotaenia	<i>Rasbora aprotaenia</i>	Not Protected	LC	No	No
8	Spotted barb	<i>Puntius binotatus</i>	Not Protected	LC	No	No
9	Ricefield eel	<i>Monopterus albus</i>	Not Protected	LC	No	No
10	Java barb	<i>Barbonymus gonionotus</i>	Not Protected	LC	No	No
11	Ikan kekhel	<i>Glyptothorax platypogon</i>	Not Protected	LC	No	No
12	Snakeskin gourami	<i>Trichogaster pectoralis</i>	Not Protected		No	No

Source: Draft EIA Report 2022.

5.2.6 Social Aspect

(1) Population

Based on the results of the 2020 Population Census, the population of Subang Regency amounted to 1,595,320 people with the composition of the male population of 800,133 people and the female population of 795,187 people. The sex ratio of Subang Regency is 102.02 which means that male residents are more than women residents by 2.02 percent. Of the 10 (ten) sub-districts in the Subang Regency, the Ciasem sub-district has the largest area of 110.49 km² with a population of 110,256 people, so it has a population density of 998 people/km². While the smallest area is Pamanukan Sub-district which has an area of 25.18 km² with a population of 58,074 people, so it has 2,331 people per square kilometer. Thus, it can be said that the distribution of the population in the Subang Regency is not evenly distributed. The number of household members in Subang Regency, from year to year always changes with an average of 3-4 people per household. Total Population, Density and Sex Ratio in the Study Area can be seen in Table 5.2.6-1.

Table 5.2.6-1 Number of Population, Density and Sex Ratio in Study Area

Area	Area (km ²)	Population (People)			Density (people/km ²)	Sex Ratio
		Male	Female	Total		
Subang Regency	2,051.76	800,133	795,187	1,595,320	740	102.02
A. Kec. Cipeundeuy	102.68	24,377	24,525	48,902	530	99.4
Village Sawangan	11.71	2,880	2,883	5,763	849	99.9
Village Kosar	5.94	1,797	1,834	3,631	1,347	98.0
B. Kec. Purwadadi	76.71	29,613	29,821	59,434	775	99.3
Village Panyingkiran	5.18	1,969	1,977	3,946	780	99.6
Village Rancamahi	5.23	1,018	1,006	2,024	404	101.2
Village Pasirbungur	21.79	3,689	3,569	7,258	355	103.4
C. Kec. Pabuaran	55.363	33,321	33,623	64,047	1,157	99.1
Village Karanghegar	9.46	4,029	4,141	8,170	626	97.3
D Kec. Patokbeusi	70.17	40,855	41,018	81,873	1,270	99.6
Village RancaBango	9.19	6,824	6,798	13,622	601	100.4
Village RancaAsih	7.14	2,390	2,394	4,784	1,711	99.8
E. Kec. Cikaum	63.11	25,135	25,237	50,372	798	99.6
Village Mekarsari	7.7	4,724	4,712	9,436	1,191	100.3

Area	Area (km ²)	Population (People)			Density (people/km ²)	Sex Ratio
		Male	Female	Total		
F. Kec. Ciasem	110.49	55,509	54,747	110,256	998	101.0
Village Jatibaru	9.94	4,153	4,130	8,283	833	99.0
G. Kec. Tambakdahan	53.40	21,786	23,733	45,519	821	99.0
Village Tanjunggrasa	6.18	2,634	2,013	4,647	977	99.8
Village Wanajaya	6.16	2,534	2,846	5,380	882	89.0
Village Mariuk	6.03	2,221	2,274	4,495	745	97.7
Village Gardamukti	6.16	2,325	2,373	4,698	763	98.0
Village Kertajaya	6.16	1,831	2,020	3,851	623	90.9
H. Kec. Pamanukan	25.18	29,926	28,778	58,074	2,331	104.0
Village Rancasari	5.16	3,618	3,568	7,186	817	101.4
Village Rancahilir	3.33	2,245	2,155	4,400	1,334	104.2
Village Bongas	2.97	2,639	2,535	5,174	1,135	104.1
I. Kec. Pusakanagara	58.12	21,229	21,744	42,973	724	97.6
Village Pusakaratu	6.50	4,511	4,588	9,099	1,517	98.8
J. Kec. Pusakajaya	48.75	24,209	24,054	48,263	1,055	100.6
Village Pusakajaya	6.28	5,477	5,334	11,931	1,924	102.6

Source: Draft EIA Report 2022.

(2) Population Structure by Age Group

From the data presented, it can be seen that in general the composition of the population in Subang Regency is mostly the productive age (15-64 years), which accounts for 70.96% of all population.

Table 5.2.6-2. Population Structure by Age Group in the Study Area

Area	Age Group			Total
	0 - 14	15 – 64	>65	
Subang Regency	349,961	1,132,069	113,290	1,595,320
Sub-district Cipeundeuy	11,050	34,604	3,248	48,902
Sub-district Purwadadi	12,816	42,491	4,127	59,434
Sub-district Pabuaran	14,325	45,376	4,346	64,047
Sub-district Patokbeusi	17,812	59,043	5,018	81,873
Sub-district Cikaum	10,963	35,566	3,843	50,372
Sub-district Ciasem	24,323	79,288	6,645	110,256
Sub-district Tambakdahan	8,815	31,840	3,144	45,519
Sub-district Pamanukan	13,321	41,853	3,530	58,074
Sub-district Pusakanagara	9,936	31,166	2,496	42,973
Sub-district Pusakajaya	10,658	34,599	3,006	48,263
Total	134,019	435,826	152,693	722,538

Source: Draft EIA Report 2022.

Based on the data above, it can be seen that most (71%) of the population are in the workforce, either already working or as job seekers and/or still in school status. The ratio of the dependents of the population in Subang Regency is 29.04, meaning that every 100 people in the labor force (productive age) must bear as many as 29 people of non-productive age.

(3) Education

Education level in Subang Regency is comparatively low and they start working in young age. Data on population of over fifteen years old shows that almost half of them (47.95%) have only completed elementary school or lower. Population who have completed up to junior high school is (21.5%). Others (35.5%) have completed high school or higher education.

Table 5.2.6-3 School Completion Rate of Population of Over Fifteen Years Old

Education Completed	Man	Woman	Total	%
Elementary or lower	232,782	108,611	341,393	47.95
Junior high school	110,496	43,037	153,533	21.56
High school or higher	147,637	69,415	217,052	30.49
Total	490,915	221,063	711,978	100

Source: Draft EIA Report 2022.

Educational facilities in the affected villages consist of educational facilities ranging from Kindergarten to Middle School levels. The educational facilities are distributed unequally in each village.

The ratio of students to teachers is an indicator to describe the workload of teachers in teaching and can be used to see the level of quality of teaching in the classroom. In 2020 an elementary school teacher in Subang Regency has to teach as many as 19 students, at the junior high school level as many as 18 students, at the high school level as many as 20 students and at the vocational high school a teacher has to teach around 19 students.

Table 5.2.6-4. Number of Schools by Education Level in Each Study Sub-district (State + private)

Area	Basic Level		First Intermediate Level		Upper Intermediate Level		
	SD	MI	SMP	Mts	SMU	SMK	MA
Subang Regency	331	111	175	69	47	108	30
Sub-district Cipeundeuy	3	2	5	1	1	3	-
Sub-district Purwadadi	11	1	6	-	3	2	-
Sub-district Pabuaran	7	2	6	2	1	2	1
Sub-district Patokbeusi	45	-	5	-	4	1	-
Sub-district Cikaum	6	2	3	3	2	1	-
Sub-district Ciasem	18	3	9	3	3	9	2
Sub-district Tambakdahan	6	2	4	-	-	2	-
Sub-district Pamanukan	14	2	6	4	2	3	2
Sub-district Pusakanagara	5	4	5	1	1	1	1
Sub-district Pusakajaya	9	6	6	2	-	4	2

Source: Draft EIA Report 2022.

(4) Medical Condition

a) Medical Facility

In Subang Regency, there are eight hospitals that are ready to serve for the community. According to local government, all affected villages have more than one public healthcare center (so called Puskesmas) and more than forty-six integrated healthcare centers.

Table 5.2.6-5 shows the number of medical facilities in the affected area.

Table 5.2.6-5 Number of Medical Facilities in the Affected Villages

Area	Medical facility			
	Hospital	Public Health Center	Integrated Healthcare Center	Clinic/Health Center
Subang Regency	8	112	1,852	109
Sub-district Cipeundeuy	-	4	51	4
Sub-district Purwadadi	-	1	68	5
Sub-district Pabuaran	-	2	71	6
Sub-district Patokbeusi	-	5	53	5
Sub-district Cikaum	-	1	57	2
Sub-district Ciasem	-	2	96	14

Area	Medical facility			
	Hospital	Public Health Center	Integrated Healthcare Center	Clinic/Health Center
Sub-district Tambakdahan	-	2	59	10
Sub-district Pamanukan	2	1	64	11
Sub-district Pusakanagara	-	3	46	-
Sub-district Pusakajaya	-	2	51	4

Source: Draft EIA Report 2022.

b) Medical Workers

In addition, there are 204 doctors, 426 nurses and 431 midwives working in Subang Regency in 2020. At least, two doctors work in each affected sub-district. Numbers of medical workers are shown below.

Table 5.2.6-6 Number of Medical Workers in the Affected Area

(person)

Areae	Medical workers				
	Doctor	Nurse	Midwife	Pharmacist	Nutritionist
Subang Regency	204	426	431	34	30
Sub-district Cipeundeuy	14	18	17	-	-
Sub-district Purwadadi	8	-	16	-	-
Sub-district Pabuaran	3	-	-	-	-
Sub-district Patokbeusi	2	-	27	-	-
Sub-district Cikaum	4	-	31	-	-
Sub-district Ciasem	19	25	39	-	-
Sub-district Tambakdahan	3	-	20	-	-
Sub-district Pamanukan	51	-	33	-	-
Sub-district Pusakanagara	5	-	17	-	-
Sub-district Pusakajaya	3	-	24	-	-

Source: Draft EIA Report 2022.

c) Major Types of Diseases

Based on data from Subang Regency, the most common types of disease prevailing in Subang Regency are respiratory infections (20,064 cases), followed by Gastritis with 6,013 cases and Essential hypertension with 5,046 cases. According to data on types of diseases at the Subang Regency Health Office, table 5.2.6-7 shows the most common diseases in Subang Regency..

Table 5.2.6-7. Major Disease Registered at the Subang District Health Office

No	Disease Type	Subang Regency	
		No. of Cases	%
1	Acute respiratory infections (ARI)	20,064	38.16
2	Myalgia	4,687	8.92
3	Essential hypertension	5,046	9.60
4	Gastritis	6,013	11.44
5	Fever	4,483	8.53
6	Dyspepsia	2,898	5.51
7	Headache	1,807	3.44
8	Diarrhea and Gastroentitis	2,060	3.92
9	Pulpitis	681	1.30
10	Dermatitis	1,939	3.69
11	Tuberculosis	1,320	2.50
Total		52,574	100

Source: Draft EIA Report 2022.

According to Subang Regency, cases of major infectious diseases are reported as shown in table 5.2.6-8. The most prevailing infectious diseases in Subang Regency is diarrhea with a total of 21,689 cases. Regarding to HIV/AIDS, 1,618 cases are reported in Subang Regency and 808 cases in affected villages. 6 cases of Dengue Hemorrhagic Fever (DHF) are reported in all affected villages while 143 cases reported in Subang Regency.

Table 5.2.6-8 No. of Cases of Infectious Diseases in Subang Regency in 2020

District/village	Disease Type			
	HIV/AIDS	DHF	Diarrhea	Tuberculosis
Subang Regency	1,618	143	21,689	2,579
Sub-district Cipeundeuy	20	0	857	39
Sub-district Purwadadi	72	1	945	35
Sub-district Pabuaran	52	3	1,465	63
Sub-district Patokbeusi	162	0	945	155
Sub-district Cikaum	71	0	662	46
Sub-district Ciasem	70	2	1,174	244
Sub-district Tambakdahan	46	0	243	52
Sub-district Pamanukan	184	0	1,943	78
Sub-district Pusakanagara	84	0	1,036	82
Sub-district Pusakajaya	47	0	392	42

Source: Draft EIA Report 2022.

(5) Other Basic Social Services

According to Subang Regency, 99.3% of population in the Regency are accessible to clean drinking water by any means including tap water, protected wells, springs and bottled water in 2019.

Regarding hygiene, coverage rate of toilets in 2019 is 86% in Subang Regency and the rate of households having its own septic tank are over 81%.

More than 99% of households have access to electricity lighting source delivered by PT PLN (Persero) Indonesia, the national electricity company.

Table 5.2.6-9 Households Accessible to Hygienic Housing Facilities, 2018 -2019

Indicator	(Unit: %)	
	2018	2019
Drinking clean water	98.24	99.31
Own toilet	86.69	86.04
Own toilet with Septic Tank	80.94	81.26
PLN Electric Lighting Source	99.90	99.42

Source: Draft EIA Report 2022.

(6) Economics

Main economics of Subang Regency is services and followed by agriculture and industry in scale order. The total working population over 15 years old is 764,284 people. 342,949 people (47.22%) are working in service sector, 227,800 people (29.81%) are in agricultural sector, and 175,535 people (22.97%) in industry sector. Some households especially in agricultural sector have dual livelihoods in multiple sectors such as agriculture and industry. Below table shows business sector of working population in Subang Regency.

Table 5.2.6-10 Business Sector of Working Population in Subang Regency

Business Sector	Man	Woman	Total	%
Agriculture	158,938	68,862	227,800	29,81
Industry	106,006	69,529	175,535	22,97
Services	203,758	139,191	342,949	47,22
Total	468,702	277,582	764,284	100

Source: Draft EIA Report 2022.

5.3 Scoping Result

Scoping process of AMDAL is usually implemented in the stage of preparation of KA-ANDAL. Although the scoping results of the Project has already been approved in KA-ANDAL before the Technical Assistance, scoping was reviewed as shown in table 5.3-1 referring to JICA Guidelines to ensure if necessary assessment is incorporated in the AMDAL and LARAP.

Table 5.3-1 Scoping Result

Category	No	Impacts	Rating		Description of the Rating
			Pre-CP/CP	OP	
Pollution	1	Air pollution	✓	✓	Construction Phase : Temporary air pollution due to operation of construction machines and vehicles and construction of basecamp is expected. Operation Phase : Air pollution caused by the increase of traffic amount is expected.
	2	Water pollution	✓	✓	Construction Phase : Direct water turbulence in river is not expected since installation of piers in rivers is not planned. However, turbid water due to soil erosion and drainage form worker's camp will be generated. Operation Phase : Rain water on the road and bridge surface will be consolidated in the drainage to be installed along the road and bridge, and it will be discharged into the river. Drainage from employment buildings and rest areas will be generated.
	3	Waste	✓	✓	Construction Phase : Domestic waste will be generated from workers. Oils will be generated as hazardous waste. Operation Phase : Domestic waste will be generated from toll facilities and rest areas.
	4	Soil contamination	✓		Construction Phase : Oil spill from the machines and vehicles may be generated. Operation Phase : Activities which may cause soil contamination are not expected in this project.
	5	Noise and vibration	✓	✓	Construction Phase : Noise and vibration from construction material, operation of vehicles are expected. Operation Phase : Noise and vibration from vehicles are expected.
	6	Ground subsidence			Activities which may cause ground subsidence (e.g mass groundwater use) are not expected in this project.
	7	Odor			Activities which may cause offensive odor are not expected in this project.
	8	Sediment quality			Activities which may cause sediment quality degradation are not expected in this project.
Natural environment	9	Protected area			There is no national park and protected area in and around the project area.
	10	Ecosystem	✓	✓	The project area is mostly agricultural land but not native

Category	No	Impacts	Rating		Description of the Rating
			Pre-CP/CP	OP	
					forest. Therefore, it is assumed less possibility that important habitats exist in the project area. However, the impact will be assessed upon survey.
	11	Hydrology			Construction Phase : The construction works will not include activities changing direction of river flow and riverbed. Operation Phase : The project may not install any structures in the river or canal. Thus, changing the hydrology condition is not expected.
	12	Topography and geology	✓		Construction Phase : Soil erosion may be generated due to embankment and cutting works. Operation Phase : The project operation will not change topography and geology.
Social environment	13	Involuntary resettlement	✓		Pre-construction Phase : Land acquisition of agricultural land and residential area is required and it causes involuntary resettlement. Operation Phase : Additional land acquisition and involuntary resettlement are not expected after the commencement of the operation
	14	Poverty	✓	✓	The impact on the poverty group will be evaluated upon results of interviewing sampling households around the project area.
	15	Indigenous groups and ethnic minority	✓	✓	The impact on indigenous groups and ethnic minorities will be evaluated upon the result of social characteristics and demographic survey.
	16	Local economy such as employment and livelihood	✓	✓	Construction Phase: The project will provide job opportunities to the local communities during the construction phase. Operation Phase : The project operation will increase job opportunities to the local communities and demand of local business.
	17	Land use and local resources	✓		Pre-construction Phase : Land use at the limited area (within ROW) will be changed due to construction of the project. Operation Phase : Additional change of land use is not planned after the commencement of the operation
	18	Water usage			The project is not expected to use a large amount of water. In addition, installation of piles or structures are not planned. Therefore, Impact to crossing rivers and irrigations will not be expected
	19	Existing social infrastructures and services	✓	✓ -	Pre-construction Phase/ Operation Phase : Impact on accessibility to infrastructures and services (e.g. hospitals, schools, and religious places) will be determined.
	20	Social institutions such as social infrastructure and local decision-making institutions	✓	✓	Impact on formal and informal decision-making institutions (e.g. religious group leaders) will be determined upon further survey.
	21	Misdistribution	✓	✓	Risk of misdistribution of benefit and damage will be

Category	No	Impacts	Rating		Description of the Rating
			Pre-CP/CP	OP	
		n of benefit and damage			determined upon further survey.
	22	Local conflict of interests	✓	✓	Potential risk of local conflict of interest due to the project will be determined upon further study.
	23	Cultural heritage	✓	✓	Potential risk of cultural heritage in/around the project area will be determined upon further study.
	24	Landscape			Most region of the project area is agricultural land. There is no landscape where requires consideration in/around the project site.
	25	Gender	✓	✓	Impact will be determined upon further study regarding current women lifestyle and decision making by women among communities and households.
	26	Right of children	✓	✓	Degree of negative impact on right of children (e.g. child labor) will be determined upon further study regarding school enrollment rates around the project area.
	27	Infectious diseases such as HIV/AIDS	✓	✓	Construction Phase : The expanding of the infectious disease including covid-19 is assumed from the influx of construction workers. Operation Phase : The expanding of the infectious disease including covid-19 is assumed.
	28	Occupational environment (including work safety)	✓		Construction Phase : Construction workers are needed to be considered in the occupational health. Operation Phase : The works which may threaten workers health are not expected.
Other	29	Accidents	✓	✓ -	Construction Phase : There are risks of accidents under construction works. Operation Phase : The traffic accidents are assumed.
	30	Cross boundary impacts and climate change		✓	Construction Phase : Activities will be temporary and limited to the project area, thus, cross boundary impacts and climate change is not anticipated. Operation Phase : Without the project, traffic volume will be concentrated in the existing route to the Patimban port and may increase GHG exhausted from vehicles. With the project, GHG reduction is expected due to improvement of traveling speed.

5.4 Survey TOR

Based on the scoping results, outline of the information collection and the methodologies are summarized in Table 5.4. -1. Those survey were already incorporated in the AMDAL/EIA and LARAP study with the support of the Technical Assistance. Impact of GHG emission was not included in environmental assessment scope in Indonesia, however, amount of GHG emission was estimated as JICA guideline recommend.

Table 5.4-1 Survey TOR

Category	Item	Information to be collected	Methodology
Pollution	Air pollution	<ul style="list-style-type: none"> - Ambient air quality sampling (SO₂, NO₂, O₃, NMHC, TSP, PM₁₀, PM_{2.5}, Pb) - Standards - Impact during construction and operation 	<ul style="list-style-type: none"> - Field survey - Review construction details and methods - Review traffic prediction

	Water pollution	<ul style="list-style-type: none"> - Ground and surface Water quality measurements: (pH, BOD, COD, DO, N, P and others) - Standards - Water use (ground/surface) - Impact during construction and operation 	<ul style="list-style-type: none"> - Field survey - Review construction details and sewage from basecamp - Review sewage from service areas
	Waste	<ul style="list-style-type: none"> - Wastes generated from basecamp, construction sites and their treatment methods - Wastes generation from service areas and their treatment methods 	<ul style="list-style-type: none"> - Review construction details, methods, and machineries
	Soil Contamination	<ul style="list-style-type: none"> - Impact during construction (types of wastes from construction area and treatment methods) 	<ul style="list-style-type: none"> - Review construction details, methods, and machinery
	Noise and Vibration	<ul style="list-style-type: none"> - 24 hours Noise & Vibration level sampling in communities - Standards - Impact during construction and operation 	<ul style="list-style-type: none"> - Field survey - Review construction details, methods, and machineries
Natural Environment	Ecosystem	Aquatic biota, terrestrial flora and fauna	<ul style="list-style-type: none"> - Field survey - Interview
	Topography and geology	<ul style="list-style-type: none"> - Amount of soil erosion 	<ul style="list-style-type: none"> - Field survey - Secondary data - Review construction methods
Social condition	Involuntary resettlement	<ul style="list-style-type: none"> - Scale of land acquisition - Replacement cost survey 	<ul style="list-style-type: none"> - Secondary data
	Poverty	<ul style="list-style-type: none"> - Household income level, and comparison with the poverty line (definition of the poor in Indonesia) - Unemployment rate 	<ul style="list-style-type: none"> - Field survey - Interview - Secondary data
	Indigenous groups and ethnic minority	<ul style="list-style-type: none"> - Population - Ethnicity - Religion 	<ul style="list-style-type: none"> - Interview - Secondary data
	Local economy such as employment and livelihood	<ul style="list-style-type: none"> - Livelihood means/employment of PAPs - Livelihood means/employment of local area 	<ul style="list-style-type: none"> - Interview - Secondary data
	Land use	<ul style="list-style-type: none"> - Land use and the map - Area (ha) by land use type 	<ul style="list-style-type: none"> - Field survey - Interview - Secondary data
	Social infrastructures and services	<ul style="list-style-type: none"> - Location of hospitals, schools, religious facilities (mosque, etc.) 	<ul style="list-style-type: none"> - Field survey - Secondary data
	Local decision-making organization	<ul style="list-style-type: none"> - Formal/Informal decision making unit and the structure (village, customary community unit, etc.) - Decision maker (village leader, informal leader, etc.) 	<ul style="list-style-type: none"> - Interview
	Misdistribution of benefit and damage	<ul style="list-style-type: none"> - Livelihood of PAPs 	<ul style="list-style-type: none"> - Interview - Secondary data
	Local conflict of interests	<ul style="list-style-type: none"> - Supportive/Unsupportive on the project, with the reason 	<ul style="list-style-type: none"> -
	Gender	<ul style="list-style-type: none"> - Women's lifestyle 	<ul style="list-style-type: none"> - Interview

		- Women's right of decision in household and community	
	Right of children	- School enrolment rate - Possibility of child labour	- Interview
	Infectious diseases	- Number of HIV/AIDS and the other sexually transmitted infections (STI) cases - Existing measures and programs to prevent infectious diseases including STI and COVID-19	- Interview
	Occupational Environment	- Labor related legislation (for construction workers)	- Interview
Others	Accidents	- Number of traffic accidents	- Secondary data
	Emission of greenhouse gas	- Carbon dioxide emission intensity of vehicles by type and speed	- Estimation using number of vehicles and emission per vehicle

5.5 Survey Result

Table 5.5-1 shows environmental and social consideration survey results implemented based on the survey TOR.

Table 5.5-1 Survey Result

Items	Results of Survey
Air pollution	<p>Construction Phase : Temporary TSP and air pollutants due to piling and earth work with operating construction machines and vehicles is expected. According to FS report, the project construction plan is shown as below:</p> <ol style="list-style-type: none"> (1) Pile Foundation <ul style="list-style-type: none"> - PC Spun Pile (D=600mm) (2) Substructure <ul style="list-style-type: none"> - RC Pier (3) Superstructure <ul style="list-style-type: none"> - PC-U Girder / PC-I Girder - Hollow Core Slab Girder (4) Piled Slab <ul style="list-style-type: none"> - RC Slab - PC Spun Pile (D=600mm) (5) Embankment and Pavement <ul style="list-style-type: none"> - Earth Work & Aggregate Base - Soil Improvement - Rigid Pavement <p>TSP during transportation of soils for embankment are expected. They are brought from borrowing pits located outside of ROW.</p> <p>According to EIA report, the impact on air due to above activities are classified as not hypothetically significant impact which is manageable with appropriate control measurements and not addressed pollution prediction.</p> <p>Operation Phase: Air pollution dispersion is predicted with the condition of vehicles driving minimum speed of 60km/h, 70% of vehicles is trucks with diesel fuel and the rest are four-wheeled vehicles using diesel fuel or gasoline, which is congested by heavy and inefficient fuel vehicles with slow speed. The prediction approach is used line sources emission approach. The results are CO, SO₂, HC, TSP, PM₁₀ and PM_{2.5}.</p> <p>However, NO_x is predicted to exceed (241µg/m³) the national standard (200 µg/m³) up to a radius of 200m from the emission source. Exceedance of NO_x within a radius of 200m from the source is caused when congested by heavy and inefficient fuel vehicles with slow speed.</p>
Water	Use of surface water (irrigation channels and river): irrigation, discharged of wastewater, and

<p>pollution</p>	<p>sometimes fishing. It is not used for drinking water (98% of local communities have access to clean water such as bottled water, tap water from piped or pumping well).</p> <p>Construction Phase:</p> <ul style="list-style-type: none"> - TSS, BOD, COD, DO, Nitrogen, Iron and coliform of baseline surface water quality are exceeded. - Soil erosion due to embankment work is expected to increase TSS surrounding surface water bodies. From the calculation of the potential for increased erosion of (106.07 – 91.22) tons/ha/year = 14.85 tons/ha/year this erosion can increase the TSS value (please refer topography and geology). - 12.24 m³/day of Domestic wastewater will be generated. It is collected and treated in septic tank. Sludges are collected by a licensed company and treated water are discharged through pipes. <p>Operation Phase: Storm water runoff and drainage from toll facilities and rest areas are generated.</p> <ul style="list-style-type: none"> - Runoff water is collected in drainage structures sides of the road and discharged to river. - 2 m³/day from toll facility and 56.4 m³/day from rest area of domestic wastewater will be generated. It will be collected and treated in septic tank. Sludges are transported by a licensed company for advanced treatment and treated water is discharged through pipes. - Oil separators will be installed in a rest area.
<p>Waste</p>	<p>Construction Phase:</p> <ul style="list-style-type: none"> - According to EIA report, domestic waste per person is predicted to be generated by 0.5 kg/day. Domestic wastes from 420 workers are generated by 220 kg/day. They are collected in trash cans and transported by a licensed company for final waste treatment. - According to EIA report, hazardous waste generated during construction phase is used oil, sludges and medical wastes. Used oil in order to maintain machineries and vehicles will be generated by 1,396 liters/month. It will be stored in storage area with temporary storage place permit (so called TPS LB3) and collected by a licensed company for final treatment. Other hazardous wastes are also separated, temporary stored and treated in TPS LB3. - TPS LB3 is built with environmental measurement and safety controls including spill collection system (drainage and liner to prevent seepage) in accordance with the national and local government law. - Management of both domestic and hazardous wastes and design of TPS LBS are planned in standard operating procedures (SOPs) attached AMDAL which was developed to anticipate and/or minimize impacts. - 133,167.07m³ of excavated topsoil due to land clearing is generated. They will be reused for embankment on side road and planting. <p>Operation Phase:</p> <ul style="list-style-type: none"> - According to EIA report, domestic waste is generated by 0.1kg/day per employee in management office and 0.3kg/day per person in rest area. Domestic wastes from employee’s buildings and rest area are estimated to generate by 340 kg/day. - According to EIA report, hazardous waste generated during operation phase is used oil. Used oil generated due to operational vehicles are planned to store in drum cans or jerry cans and temporary stored in LB3.
<p>Soil Contamination</p>	<p>Soil contamination is expected when proper waste management is failed. <i>See survey result of waste in construction phase for soil contamination control measure.</i></p>
<p>Noise and Vibration</p>	<p>Construction Phase:</p> <ul style="list-style-type: none"> - Construction methods which may cause noise and vibration are piling and traffic and operation of construction vehicles. - According to EIA report, noise and vibration is classified as hypothetically non-significant impact which is manageable with mitigation measures. Therefore, predicting impact of construction methods is not calculated in AMDAL. <p>Operation Phase:</p> <ul style="list-style-type: none"> - The source of noise and vibration is vehicle. - According to EIA report, noise and vibration during operation phase is also classified as hypothetically non-significant impact which is manageable with mitigation measures. Therefore, predicting impact of construction methods is not calculated in AMDAL.

Ecosystem	<ul style="list-style-type: none"> - The project area is classified as “modified habitat¹⁵” described in IFC PS6, where is mostly agricultural land and there is neither native forest, IBAs, nor protective habitats recognized as critically endangered or endangered species described in IUCN Red List of Threatened Species or as defined in any national legislation. In addition, most of vegetation and animals are artificially bred. - According to field survey, protected species by the national law were not found. However, Mozambique tilapia (<i>Oreochromis mossambicus</i>) and carp (<i>Cyprinus carpio</i>) (IUCN: VU) has been reported by the baseline survey. Both species are alien species introduced from other countries as a source of food. Even though both are alien species to the research area, threats and potential risks which the project may increase are identified as below: - Threats of Mozambique tilapia which are the reasons of VU classification by IUCN are that The Nile Tilapia (<i>Oreochromis niloticus</i>), is invading its natural range in the Zambezi and Limpopo rivers systems¹⁶. Nile tilapia is not found in the research area. In addition, the Project is not introducing invading and other problematic species. Therefore, the impact on Mozambique tilapia is not expected. - Threats of carp which are the reason of VU classification by IUCN are mainly river regulation such as dams (they require flooded areas to spawn) and hybridization with introduced stocks¹⁷. Installation of structures inside of river and the Project does not break river regulation. In addition, the Project is not introducing invading and other problematic species. Therefore, the impact on carp is not expected. - According to baseline survey results, bar-winged prinia (<i>Prinia familiaris</i>)(IUCN: NT) has been found. This species is categorized as NT because it was confirmed the decrease due to hunting in Indonesia. On the other hand, its habitats are broad including artificial plants such as parks, plantations and roadside trees. Decrease of this species is not expected due to the construction of the Project. - According to baseline survey results on biodiversity in water (planktons and benthos) is classified as poor diversity and lightly polluted on irrigation channels. Source of impact is soil erosion, which occurs during rain, not constantly. However, it needs mitigation measures to decrease the amount of inflow.
Topography and geology	<ul style="list-style-type: none"> - Based on land movement vulnerability zone map of Subang Regency, the Project area is categorized as a very low level of vulnerability to landslides. In addition, the south part of the Project area is located in earthquake-prone zone, however, the other area is located in low earthquake-prone zone. - Construction methods which may cause soil erosion are earthworks. - According to EIA report, it increases the amount of erosion especially while raining. This increase is calculated using the Universal Soil Loss Equation (USLE). Amount of current erosion is calculated as 91.22ton/ha per year with the assumption that current land use is mixed field. While amount of erosion in the project site where is open land and without undergrowth and litter due to land clearing for the Project, is 106.07ton/ha per year. The increase is assumed 14.85 tons/ha per year. This increase is classified as moderate in erosion rate and have moderate impacts on water quality and topography by depositing soils to lower river without any mitigation measures.
Involuntary resettlement	<ul style="list-style-type: none"> - 1433 of landowners, 388 of tenants, and 823 of workers are affected by the Project. Out of them, 484 households (1553 people) need relocation. - Compensation and land acquisition procedures will be implemented according to LARAP complying with JICA guidelines and the national law. - For more details, see Chapter 6. Advice on Preparation of Land Acquisition and Resettlement Action Plan (LARAP)
Indigenous groups and minorities	<ul style="list-style-type: none"> - People in the affected area are composed of Javanese (82%), Sudanese (13%) and others (5%). Any minority group to be considered as JICA guidelines states is not identified.

¹⁵ IFC Performance Standard 6 https://www.ifc.org/wps/wcm/connect/7f5f4e80-f733-46c4-b3f8-851898c7fc8b/2007%2BUpdated%2BGuidance%2BNote_6.pdf?MOD=AJPERES&CVID=jqeAX6x

¹⁶ IUCN website <https://www.iucnredlist.org/ja/species/63338/174782954#habitat-ecology>

¹⁷ IUCN website <https://www.iucnredlist.org/ja/species/6181/12559362#threats>

Local economy such as employment and livelihood

The most common livelihood of the PAPs is agriculture such as cultivating paddy fields and plantations, 64.2%. 15 people of PAPs (1.1%) are unemployed. The complete description of household head livelihoods are shown below.

Table 5.5-2 Landowner's Occupations of PAPs

Location		Main Occupation						Total
Sub-district	Village	1	2	3	4	5	6	
Ciasem	Jatibaru	45	9	0	2	0	0	56
Cikaum	Mekarsari	44	45	37	15	14	6	161
	Pasirmuncang	26	1	1	0	1	0	29
Cipeundeuy	Kosar	15	15	6	4	2	0	42
	Sawangan	108	39	16	27	34	6	230
Pabuaran	Karanghegar	66	11	5	6	2	0	90
Pamanukan	Bongas	51	14	4	3	6	0	78
	Rancahilir	55	8	8	4	7	0	82
	Rancasari	9	1	1	0	0	0	11
Patokbeusi	Rancabango	14	5	0	2	2	0	23
Purwadadi	Panyingkiran	41	12	1	7	17	0	78
	Pasirbungur	49	10	4	5	4	0	72
	Rancamahi	3	1	2	2	4	0	12
Pusakajaya	Pusakajaya	2	0	0	0	1	0	3
Pusakanagara	Kotasari	123	0	0	1	3	0	127
Tambakdahan	Gardumukkti	14	0	0	0	4	1	19
	Kertajaya	77	2	0	2	3	2	86
	Mariuk	43	1	0	1	4	0	49
	Tanjunggrasa	56	11	2	3	4	0	76
	Wanjaya	31	0	0	0	4	0	35
Total		872	185	87	84	116	15	1359
Percentage (%)		64.2	13.6	6.4	6.2	8.5	1.1	100.0

Source: Draft LARAP Report 2022

Description

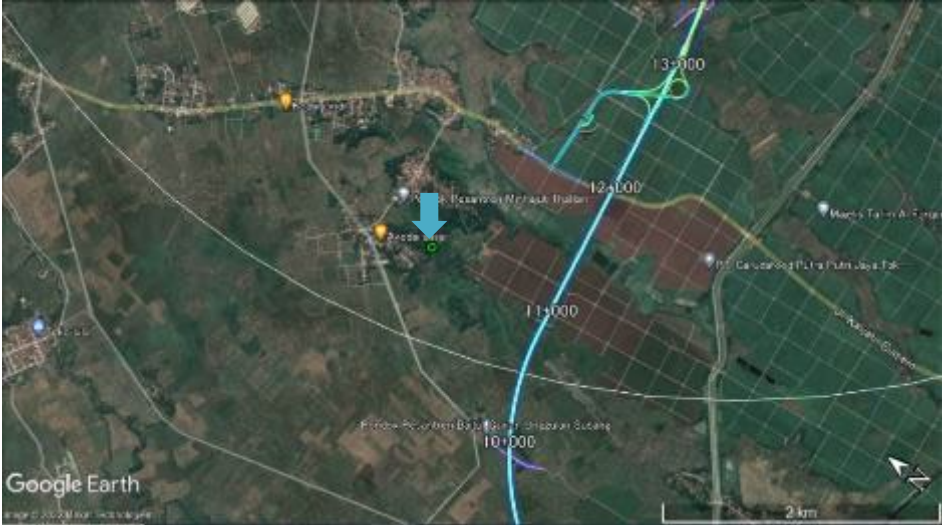
- | | |
|---------------------------------------|---------------|
| 1. Agricultural Land Owner/Plantation | 4. Employee |
| 2. Business Owner/Merchant | 5. Other |
| 3. Physical labor | 6. Unemployed |

On the other hand, 92% of workers livelihoods of PAPs comes from agricultural worker and plantation. The other livelihoods comes from business traders and collectors.

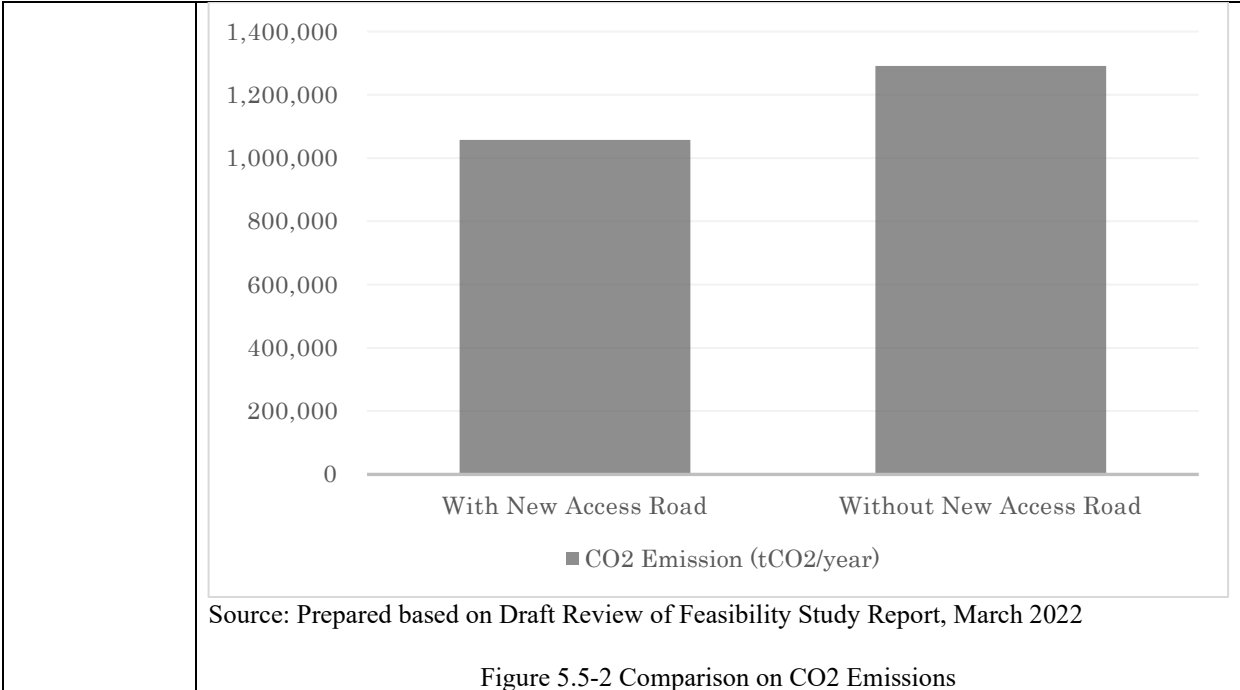
Table 5.5-3 Worker Household Head Occupation in Patimban Access Toll Road Development Plan Area

Location		Main Occupation				Total
Sub-district	Village	Land Owner Agricultural/ plantation	Agricultural worker/ Plantation Worker	Business owner/ Merchant	Collector/ Middleman	
Ciasem	Jatibaru	1	31	1	0	33
Cikaum	Mekarsari	4	50	0	0	54
	Pasirmuncang	1	19	0	0	20
Cipendeuy	Kosar	1	8	0	0	9
	Sawangan	4	11	0	0	15
Pabuaran	Karanghegar	4	65	1	0	70
Pamanukan	Bongas	2	56	1	1	60
	Rancahilir	2	71	0	0	73

		Rancasari	0	5	0	0	5
	Patokbeusi	Rancabango	0	19	0	0	19
	Purwadadi	Panyingkiran	2	48	0	2	52
		Pasirbungur	1	24	0	0	25
		Rancamahi	1	6	0	0	7
	Pusakanagara	Kotasari	0	71	8	0	79
	Tambakdahan	Gardumukti	2	14	0	0	16
		Kertajaya	6	50	1	0	57
		Mariuk	3	77	2	1	83
		Tanjungrasa	4	48	1	0	53
		Wanajaya	4	54	2	0	60
	Total		42	727	17	4	790
	Percentage (%)		5,3	92,0	2,2	0,5	100
	Source: Draft LARAP Report 2022						
	<p>Pre-construction and construction phase: Approximately 420 people will be hired during the construction. Local employment will be prioritized and aimed to hire 50% out of total position. Impact on livelihood due to resettlement is expected.</p> <p>Operation phase: Creating local business in rest areas are expected.</p>						
Poverty	<ul style="list-style-type: none"> - Out of the 2493 affected households who answered questions, 175 households responded their average monthly income is below 1,000,000 Rp or less. - Supports to affected people specialized for the vulnerables is included in LARAP. 						
Land use	According to LARAP, the land use of the Project Area was specified by spatial analysis and field validation results. The most extensive use is paddy field area, 216.51 ha, followed by sugarcane/PG plantations with an area of 40.63 ha. The rest are farms and plantations, settlements, ponds, graves, and football fields.						
Existing social infrastructures and services	<ul style="list-style-type: none"> - There are rivers, irrigation channels, national and local roads, drainages and railroad. Those crossing points are equipped with 20 under-bridges, 88 overpasses and 73 canals on the route of new road. - Materials and equipment are transported via existing road. Road deterioration due to transportation may be occurred. The Project repairs those deteriorated road. 						
Social institutions such as social infrastructure and local decision-making institutions	<ul style="list-style-type: none"> - There are formal institutions including Village Deliberation Institutions (LMD) and Youth Organization and informal one such as religious leaders (ustad) and Islam teaching communities (taklim assemblies) around the project area. - Formal institution mainly acts local governmental responsibilities. Informal institutions are reaching communities and building social relation. - Those institutional functions are maintained and continued during and after the beginning of construction of the road. 						
Misdistribution of benefit and damage	<ul style="list-style-type: none"> - See <i>Economic condition</i> in household level for current livelihood level of PAPs - Job opportunities will be equally made public by such as posting on local government buildings. - Land compensations are made according to fair evaluation of loss of property based on LARAP complying with JICA guidelines and the national law. - Most of affected people are working in agricultural sectors including landowners and tenants. They are eligible to Livelihood Restoration Program (LRP) according to their needs and willing. LARAP includes agricultural strengthen, accounting, and other occupational skill training. - With those consideration, misdistribution of benefit and damage caused by the Project is not expected. 						
Local conflict of interests	<ul style="list-style-type: none"> - According to EIA report and LARAP survey, conflicts in the affected area such as an ethical conflict were not identified. - According to LARAP interview on support for the Project, 96% of landowner, 97% of tenant, and 99% of workers answered supportively. A few of interviewees expresses unsupportive comments for losing their land or workplace etc. Conversations between PAPs and the Project Executors continues, and compensation and land acquisition are implemented in accordance with LARAP. - Arguments nor conflicts among locals on the project have not been observed during public consultation. 						

<p>Cultural heritage</p>	<ul style="list-style-type: none"> - No cultural heritage sites are identified in the Project area. - According to EIA report and GIS data published by Subang Regency, the closest cultural heritage site is an unpopular monument located approximately 1 km away from the ROW (see fig. 5.5-1).  <p>Source: GIS data of Subang Regency Figure 5.5-1 Location of Cultural Heritage</p> <ul style="list-style-type: none"> - This monument is located in the middle of woods near settlements and agricultural land. No direct access with paved road is observed by GIS data. It is assumed that this heritage is accessed through residential area from local roads on East or North connected to Jalan Raya Rancabango. - There is no legal restriction for construction around this heritage. - Affected existing social facilities (social service) are 8 mosques, 4 musholla (house of worship), 2 schools, and 5 cemetery, 1 village government office. 10 of them are waqf (1 Islamic school, 7 mosques, 1 musholla, and 1 cemetery), which is obtained and/or built by community/Islamic endowment. Land acquisition and compensation procedure is implemented in accordance with LARAP embracing following procedures as the national law.
<p>Gender</p>	<ul style="list-style-type: none"> - 34% of women in Subang Regency have occupations, Women's ratio in fields are 30% in agriculture, 40% in industry and 41% in services. - According to EIA report and LARAP, women were proactively invited to stakeholder meetings. The number of women participants were recorded. - Job opportunities during construction and operation phase will be made equally to women and men. Land compensation will be made fairly to women headed households according to LARAP complying with JICA guidelines and the national law. In addition, gender action plan is developed as LARAP appendix. Further consideration on women is included in LRP.
<p>Right of children</p>	<ul style="list-style-type: none"> - See 5.1.6. social aspect for current education level in Subang Regency for baseline. - Children under 15 are prohibited to work as legislated on Article 69 of the Manpower Act (46,47). During recruitment process in the Project, contractors and operators check candidates age shown on ID to prevent child labor intentionally.
<p>Infectious diseases such as HIV/AIDS</p>	<p>Construction phase:</p> <ul style="list-style-type: none"> - In Subang Regency, 1,618 HIV/AIDS cases (2021) and 1,296 covid-19 cases (cumulative, Jan. 2021) were reported. - The possibility of spreading infectious disease is assumed by interaction between local communities and construction workers. Infectious diseases control will be included in EHS management plan complying with the national and international law and standards. <p>Operation phase:</p> <ul style="list-style-type: none"> - Infectious diseases may possibly expand due to use of rest areas. Infectious disease control complying with the government policy will be implemented.
<p>Occupational environment</p>	<ul style="list-style-type: none"> - Hazards including PMs, noise, and vibration and accidents due to site traffic and electricity exposures is possibly expected when those parameters exceeded the Indonesian standard.

(including work safety)	- EHS management plan for workers will be developed complying with the national and international law and standard.																																						
Accidents	<p>Construction phase:</p> <ul style="list-style-type: none"> - Possibility of fire, fall, electricity exposures and other accidents in construction sites are expected. Occupational Health and Safety plan will be included in EHS management plan complying with national and international laws and standards. OHS trainings will be provided before work assignment. Risks to community is not expected since crossing points on construction site will be managed by security guards. <p>Operation phase:</p> <ul style="list-style-type: none"> - Number of traffic a day on new access road is expected as 6,969 (2025), and 22,551 (2045). Safety control measures complying with the national regulation such as signs are developed and implemented. - Risks to community is minimized since pedestrians entering will be prohibited to enter the road, and underpass for community traffic will be constructed. 																																						
Cross boundary impacts and climate change	<ul style="list-style-type: none"> - Without the project, traffic volume will be concentrated in the existing route to the Patimban port and may increase GHG exhausted from vehicles. - Prediction amount of CO2 emission is calculated as below. <ul style="list-style-type: none"> ➤ Route: CO2 emissions are calculated based on two routes from the junction of the Patimban Access Toll Road and National Road No. 1 to the end of each route.. <ul style="list-style-type: none"> ✧ Route via access road indicates from the same start point and the end of access road (37km). ✧ Route via National Road No.1 indicates 51km the same start point and the toll gate in Cikampek connecting to Jakarta–Cikampek Toll Road via National Road 1. ➤ Condition: “With new access road” means the condition when traffic exists on both access road and national road no.1 (existing road). “Without new access road” indicated the condition which only national road exists. ➤ Traffic volume, travel speed, and distance are calculated based on traffic demand survey and analysis by FS study team. Each emission factor is referred from <i>grounds for the calculation of motor vehicle emission factors using environment impact assessment of road project published by national institute for land and infrastructure management, 2012.</i> ➤ CO2 emissions in 2045 are calculated based on traffic demand using JICA Climate-FIT (mitigation). In 2045, 20 years from operation, it emits 1,057,679tCO2/year with the project and 1,291,269tCO2/year without the Project. GHG reduction volume due to improvement of traveling speed in 2045 is 233,590tCO2/year. <p>Table 5.5-4 Comparison on CO2 Emission between With and Without Access Road in 2045</p> <table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">With Access Road</th> <th rowspan="2">Without New Access Road</th> </tr> <tr> <th>Access Road</th> <th>National Road</th> </tr> </thead> <tbody> <tr> <td>Number of Light Vehicles (/day)</td> <td>7,418</td> <td>22,104</td> <td>30,445</td> </tr> <tr> <td>Number of Heavy Vehicles (/day)</td> <td>26,133</td> <td>46,196</td> <td>68,546</td> </tr> <tr> <td>Average Speed (km/hr)</td> <td>80</td> <td>30</td> <td>25</td> </tr> <tr> <td>Emission Factor of Light Vehicles (g/km/vehicle)</td> <td>135.9</td> <td>171.3</td> <td>187.5</td> </tr> <tr> <td>Emission Factor of Heavy Vehicles (g/km/vehicle)</td> <td>673.6</td> <td>855.7</td> <td>928.7</td> </tr> <tr> <td>Travel Distance (km)</td> <td>37</td> <td>51</td> <td>51</td> </tr> <tr> <td>Emission (tCO2/year)</td> <td>251,346</td> <td>806,334</td> <td>1,291,269</td> </tr> <tr> <td>Total (tCO2/year)</td> <td></td> <td>1,057,679</td> <td>1,291,269</td> </tr> </tbody> </table> <p>Source: Draft Review of Feasibility Study Report, March 2022</p>		With Access Road		Without New Access Road	Access Road	National Road	Number of Light Vehicles (/day)	7,418	22,104	30,445	Number of Heavy Vehicles (/day)	26,133	46,196	68,546	Average Speed (km/hr)	80	30	25	Emission Factor of Light Vehicles (g/km/vehicle)	135.9	171.3	187.5	Emission Factor of Heavy Vehicles (g/km/vehicle)	673.6	855.7	928.7	Travel Distance (km)	37	51	51	Emission (tCO2/year)	251,346	806,334	1,291,269	Total (tCO2/year)		1,057,679	1,291,269
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5.6 Impact Assessment Results and Mitigation Measures

Environmental and social impacts due to the Project were assessed based on scoping result and environmental and social consideration study. The results are shown as below. The mitigation measures were addressed in Environmental Management and Monitoring Plan (RKL-RPL) to be approved by the environmental agency and/or in the LARAP.

Table 5.6-1 Impact Assessment Results

No.	Impacts	Rating		Description of the Rating	Mitigation Measures
		Assessment results			
		CP	OP		
1	Air pollution	B-	B-	<p>Construction phase: Temporal TSP due to operation of construction machines and vehicles and work on unpaved ground is expected to increase.</p>	<p>Based on the Construction and Building Guidelines No.010/BM/2009 concerning Guidelines for Monitoring Environmental Management in the Road Sector, namely:</p> <ul style="list-style-type: none"> sprinkling road access to location basecamp (especially on the road in and out vehicles and equipment project) Limit height of piling up materials (sand) and fencing the basecamp area (reducing blow wind). Limiting the speed of the transport truck vehicle (max. 40 km/hour); Carry out periodic watering on access roads traversed by material transport vehicles (especially dirt roads). Periodic maintenance of vehicle Using a roadworthy vehicle (KIR). <p>(Ref. RKL-RPL Ch.2 Table 2.7 No. 2, 10, 13, 21)</p>
				<p>Operation phase: All parameter except NOx satisfies the National quality standard. However, NOx up to radius of 200 meters is predicted to exceed the national quality standard taking place in traffics and heavy vehicles passing at speeds below 60km/h.</p>	<p>Planting trees and grasses on the side of the road within ROW to absorb air pollutants.</p> <p>(Ref. RKL-RPL Ch.2 Table 2.3 No. 11)</p>
2	Water pollution	B-	B-	<p>Construction phase: TSS, BOD, COD, DO, Nitrogen, Iron and coliform of baseline surface water quality are exceeded the national standard. Turbid water may be generated by construction works such as embankment. Even though background data of TSS has already exceeded the national standard, turbid water must be controlled not to spread to the adjacent area.</p> <p>Generated domestic water is collected and treated in septic tank. Treated water is discharged through pipes and sludges are collected by a licensed</p>	<p>Septic tanks in basecamps with technical specifications which are obtained environmental permission are installed in basecamp.</p> <p>To prevent soil runoff due to construction works, sediment traps are installed channels which lead to rivers.</p> <p>(Ref. RKL-RPL Ch.2 Table 2.3 No. 6, Table 2.7 No. 4, 5, 6)</p>

No.	Impacts	Rating Assessment results		Description of the Rating	Mitigation Measures
		CP	OP		
				company for an advanced treatment. Operation phase: Storm water runoff and drainage from toll facilities and rest areas are generated. Stormwater is collected in drainage structure on the side of roads and discharged to river. Generated domestic water is collected and treated in septic tank. Treated water is discharged through pipes and sludges are collected by a licensed company for an advanced treatment.	Appropriate drainage networks are developed not to run off settlement or rice fields. Septic tanks with technical specifications which obtained environmental permission are installed in rest area and toll facilities. Oil separators is installed in rest area. (Ref. RKL-RPL Ch.2 Table 2.7 No. 29)
3	Waste	B-	B-	Construction phase: Domestic wastes from 420 workers will be generated by 220 kg/day. Used oil due to maintenance machineries and vehicles will be generated by 1,396 liters/month. other hazardous waste such as medical wastes are also generated and managed as same as used oil. Excavated topsoil is reused for plantation and sideroad embankment. Operation phase: Domestic wastes from employee's buildings and rest area will be generated by 340 kg/day.	Trash cans are provided for domestic wastes which are transported periodically to a final waste treatment site by a licensed company Hazardous wastes are collected and temporary stored at waste storages complying with the Law of the Republic of Indonesia Number: 18 of 2008 concerning Waste Management (Ref. RKL-RPL Ch.2 Table 2.7 No.7, 19, 23) Domestic wastes are collected at trash cans and periodically transported to a final waste treatment site by a licensed company (Ref. RKL-RPL Ch.2 Table 2.7No. 30)
4	Soil contamination			Oil spill from machinery and vehicle is expected. 42 liters/month of oil spill is under management of agent soil contamination control.	Used oil is collected in drums and temporally stored in TSP LB3. Licensed company will collect and process it every three months. (Ref. RKL-RPL Ch.2 Table 2.7 No. 19, 30)
5	Noise and vibration	B-	B-	Construction phase: Noise and vibration from construction material and vehicles is expected. The background noise level in residential areas is already the same level or very close to the national quality standard. Noise level due to construction activities will temporarily increase current background level. The background vibration level in residential area is less than 0.015 mm/sec where the national quality standard is 10mm/sec. Noise and vibration level in residence and	Based on the Construction and Building Guidelines No: 010/BM/2009 concerning Guidelines for Monitoring Environmental Management in the Road Sector, namely: Limiting the speed of the transport truck vehicle (max. 40 km/hour); Periodic maintenance of vehicle engines. Before constructing bridge, the surrounding population are notified about activities and disturbances of comfort. The time setting for work is during working hours from 07.00 – 17.00.

No.	Impacts	Rating Assessment results		Description of the Rating	Mitigation Measures
		CP	OP		
				<p>construction area will be monitored.</p> <p>Operation phase: Noise and vibration from vehicles are expected. Noise and vibration level in residence will be monitored.</p>	<p>Using a roadworthy vehicle (KIR). Fencing around basecamp At the piling point near settlements, non-vibrating pile driver (hydraulic pile driver) will be used. (Ref. RKL-RPL Ch.2 Table 2.7 No. 3, 11, 14, 22, 27)</p> <p>Planting trees and grasses on both sides of the road. Construction of sound barriers/fences (toll road segments bordering settlements) (Ref. RKL-RPL Ch.2 Table 2.7 No. 28)</p>
6	Ecosystem	B-	D	<p>Construction phase: The project area is mostly agricultural land and there is neither native forest, IBAs, nor protective habitats. In addition, most of vegetation and animals are bred. According to field survey, protected species by the national law were not found. However, Mozambique tilapia (<i>Oreochromis mossambicus</i>) and carp (<i>Cyprinus carpio</i>) (IUCN: VU) has been reported by the baseline survey. Both species are alien species introduced from other countries as mainly source of food. Threats on those species do not exist in the research area nor increase by the Project.</p> <p>According to baseline survey results on biodiversity in water (planktons and benthos) is classified as poor diversity and lightly polluted on irrigation channels. Increase of TSS due to soil erosion may lead to degradation of water biodiversity even though it potentially occurs during raining. However, it needs mitigation measures to decrease the amount of flowing soil erosion into rivers.</p> <p>Bar-winged prinia (<i>Prinia familiaris</i>) (IUCN: NT) has been found but decrease of the species is not expected due to the construction of the Project.</p> <p>Operation phase: Accident risks to livestock is not expected as walls along the road are constructed in order to prevent entry of animals by constructing.</p>	<p>Placing sediment traps at where lead to the nearest body of water (Ref. RKL-RPL Ch.2 Table 2.4 No. 7)</p>

No.	Impacts	Rating		Description of the Rating	Mitigation Measures
		Assessment results			
		CP	OP		
7	Topography and geology	B-	N/A	Construction phase: Amount of soil erosion will be increased due to embankment and cutting works. The annual increase in soil erosion is calculated 14.85 tons/ha using the Universal Soil Loss Equation.	Clearing land is limited to ROW compaction is conducted in accordance with standard technical specifications Placing sediment traps at where lead to the nearest body of water (Ref. RKL-RPL Ch.2 Table 2.4 No. 5)
8	Involuntary resettlement	A-	N/A	The land acquisition will affect 1433 landowners, 388 tenants, and 823 workers. Out of them, 484 households (1553 persons) need house relocation.	Compensation and land acquisition procedures will be implemented according to LARAP complying with JICA guidelines and the national law.
9	Poverty	B-	B-	Out of the 2493 affected households, 175 households responded their average monthly income is below 1,000,000 Rp or smaller	Implementing land acquisition and resettlement based on LARAP including supports to vulnerable people and implementing LRP.
10	Indigenous and ethnic people	D	D	People in the affected area are composed of Javanese and Sudanese. Any minority group to be considered in JICA guidelines is not identified.	
11	Local economy such as employment and livelihood	B±	B+	Pre-construction and construction phase: Approximately 420 people will be hired during the construction. Local employment will be prioritized and aimed to hire 50% out of total position. Impact on livelihood due to land acquisition is expected.	Prioritizing local people recruitment for construction works. Implementing land acquisition and resettlement based on LARAP including compensation to business and implementing LRP. Providing spaces for workers canteens to local MSMEs. (Ref. RKL-RPL Ch.2 Table 2.4 No.1, 2, 3)
				Operation phase: Opening local business in rest areas is expected.	Prioritizing local people recruitment for rest area and toll facilities during operation phase. (Ref. RKL-RPL Ch.2 Table 2.4 No. 9, 10)
12	Land use and utilization of local resources	D	N/A	Pre-construction phase: ROW will be barrierred by walls and prevented from local interaction. Changes in land use along ROW stimulated by the construction of road is not expected.	
13	Existing social infrastructures and services	B-	B-	Pre-Construction phase and Construction phase: Land acquisition will affect existing roads, irrigation channels, and mosque/musholla. Road deterioration due to transportation may be occurred.	Implementing land acquisition and resettlement based on LARAP. Secured accessibility of existing roads and flow of irrigation channel Mosque is appropriately compensated in accordance with LARAP The Project repairs when roads were deteriorated. (Ref. RKL-RPL Ch.2 Table 2.7 No. 9, 16, 17, 26)

No.	Impacts	Rating		Description of the Rating	Mitigation Measures
		Assessment results			
		CP	OP		
				Operation phase: Routes to social infrastructures and services on the other side of the road may need to be changed by construction of the road. Construction of underpass and pedestrian bridges to secure accessibility minimize the impact.	Underpasses or pedestrian bridges are constructed in existing roads and high traffic points as necessary demands.
14	Social institutions such as social infrastructure and local decision-making institutions	D	D	There are formal institutions including Village Deliberation Institutions (LMD) and Youth Organization and informal one such as religious leaders (ustad) around the project area. Since the institutions are maintained after the construction of the road, impacts to those decision-making institutions are not expected.	
15	Misdistribution of benefit and damage	D	D	Job opportunities will be made equally public by such as posting on local government buildings. Land compensation will be paid according to fair evaluation of loss of property based on LARAP complying with JICA guidelines and the national law. Misdistribution of benefit and damage caused by the road construction is not expected.	
16	Local conflict of interests	D	D	Conflicts in the affected area were not identified. Arguments nor conflicts among locals on the project have not been observed during public consultation (at this moment). Thus, local conflict caused by the road construction is not expected.	
17	Cultural heritage	D	D	No cultural heritage sites are identified in the project area. Although the closest cultural heritage site is an unpopular monument located approximately 1 km away from the project, the construction of new road will not interrupt the access to the monument. There is no legal construction restriction around this heritage.	
18	Gender	D	D	While 34% of women in Subang Regency have an occupation, women ratio in each business field are 30% in agriculture, 40% in industry and 41% in services. Job opportunities during construction and operation phase will be made equally to women and men. Land compensation will be paid fairly	

No.	Impacts	Rating		Description of the Rating	Mitigation Measures
		CP	OP		
				to women headed households according to LARAP complying with JICA guidelines and the national law. Further consideration on women will be included in livelihood restoration program.	
19	Right of children	D	D	Child labor is not expected by the Project. During recruitment process, candidates ID is checked to prevent child labor intentionally.	
20	Infectious diseases such as HIV/AIDS	B-	B-	Construction phase: In Subang Regency, 1,618 HIV/AIDS cases (2021) and 1,296 covid-19 cases (cumulative, Jan. 2021) were reported. The possibility of expanding infectious disease is assumed from construction workers. Infectious diseases control will be included in EHS management plan complying with the national and international law and standards.	Complying with infectious diseases control policy of the government. Provide EHS lecture including covid-19 and HIV measurement (Ref. RKL-RPL Ch.2 Table 2.7 No.8, 20)
				Operation phase: Infectious diseases may possibly expand due to use of rest areas. Infectious disease control complying with the government policy will be implemented.	Complying infectious diseases control policy of the government
21	Labor environment (including work safety)	B-	N/A	Construction phase: Hazards including PMs, noise, and vibration and accidents due to site traffic and electricity exposures is possibly expected. EHS management plan for workers will be developed complying with the national and international law and standard.	EHS management plan for labors will be developed and complied with national laws and standards. EHS lectures will be held..etc. Provide employees EHS (OHS) measurements (supply personal protective equipment, provide EHS lecture including covid-19 and HIV measurement, and accident countermeasure) (Ref. RKL-RPL Ch.2 Table 2.7 No.8, 20)
22	Accidents	B-	B-	Construction phase: Fire, fall, electricity exposures and other accidents in construction sites are possibly expected. Occupational Health and Safety plan will be included in EHS management plan complying with national and international laws and standards. OHS trainings will be provided before work assignment. Risks to community is not expected since crossing points on construction site will be managed by security guards.	Providing employees EHS (OHS) measurements (supplying personal protective equipment, spill-kits etc) Providing employees with EHS (OHS) trainings including accident countermeasure Security guards and traffic control officer will be deployed at exit (Ref. RKL-RPL Ch.2 Table 2.7 No.8, 20, 25,)

No.	Impacts	Rating		Description of the Rating	Mitigation Measures
		Assessment results			
		CP	OP		
				<p>Operation phase: Number of traffic a day on new access road is expected as 6,969 (2025), and 22,551 (2045). Safety control measures complying with the national regulation will be developed and implemented. Risks to community is minimized since pedestrians entering into the road will be prohibited, and underpass for community traffic will be constructed.</p>	<p>Placing warning signs and hazard lamps Installing walls along the road to prohibit pedestrians from entering the roads. (Ref. RKL-RPL Ch.2 Table 2.7 No.31)</p>
23	Cross boundary impacts and climate change	N/A	B+	<p>Operation phase: Without the project, traffic volume will be concentrated in the existing route to the Patimban port and may increase GHG exhausted from vehicles. GHG reduction volume due to improvement of traveling speed is 233,590tCO₂/year.</p>	

Source: JICA Survey Team

CP: Pre/During Construction Phase

OP: Operation Phase

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of positive/negative impact is unknown. (A further examination is needed, and the impact could be clarified as the study progresses)

D: No impact is expected.

5.7 Environmental Management and Monitoring Plan

The environmental management plan and monitoring plan are described in RKL-RPL. The monitoring survey plan is summarized in Table 5.7-1.

Table 5.7-1 Monitoring Survey Plan

	Item	Parameters	Monitoring Location	Time and Frequency	Implementing Agency	Supervisory Agency												
Mobilization of Work Equipment and Materials																		
1.																		
Construction Phase																		
2.	Air quality	<ul style="list-style-type: none"> - SO₂: 75 g/Nm³ - CO: 4000 g/Nm³ - NO₂: 65 g/Nm³ - TSP: 230 g/Nm³ (PPRI No. 22 of 2021 concerning the Implementation of Environmental Protection and Management)	<ul style="list-style-type: none"> - Kotasari Village Settlement, Pusaka Nagara (S 06° 16' 49,308", E 107° 51' 45,168") - Kertajaya Village Settlement, Tambak Dahan (S 06° 19' 53,497" E 107° 49' 13,276") - Jati Baru Village Settlement, Ciasem (S 06° 21' 00,547" E 107° 44' 22,208") - Pasir Bungur Settlement, Purwadadi (06° 23' 25,685" E 107° 40' 39,870") - Kosar Village Settlement, Cipendeuy (S 06° 26' 28,274" E 107° 37' 38,875") 	Every 6 months	Executor: Ministry of Public Works (DGH)	<ul style="list-style-type: none"> - Environmental Management Agency of Subang Regency 												
3.	Noise (workers)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Standards for workers</th> </tr> <tr> <th>Exposure (hour)</th> <th>dBA</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>85</td> </tr> <tr> <td>4</td> <td>88</td> </tr> <tr> <td>2</td> <td>91</td> </tr> <tr> <td>1</td> <td>94</td> </tr> </tbody> </table> (Minister of Manpower and Transmigration Regulation Number 5 of 2018 concerning Threshold Values for Physical and Chemical Factors in	Standards for workers		Exposure (hour)	dBA	8	85	4	88	2	91	1	94	<ul style="list-style-type: none"> - Kotasari Village Settlement, Pusaka Nagara (S 06° 16' 49,308", E 107° 51' 45,168") - Kertajaya Village Settlement, Tambak Dahan (S 06° 19' 53,497" E 107° 49' 13,276") - Jati Baru Village Settlement, Ciasem (S 06° 21' 00,547" E 107° 44' 22,208") - Pasir Bungur Settlement, Purwadadi (06° 23' 25,685" E 107° 40' 39,870") 	Every 6 months.	Executor: Ministry of Public Works (DGH)	<ul style="list-style-type: none"> - Environmental Management Agency of Subang Regency - Manpower and Transmigration Agency of Subang Regency
Standards for workers																		
Exposure (hour)	dBA																	
8	85																	
4	88																	
2	91																	
1	94																	

	Item	Parameters	Monitoring Location	Time and Frequency	Implementing Agency	Supervisory Agency
		the Workplace)	- Kosar Village Settlement, Cipendeuy (S 06° 26' 28,274" E 107° 37' 38,875")			
4.	Noise (residence)	- 55 dBA (residential area) (Noise Quality Standard KepMen LH No.48/1996)	- 1 monitoring spot per package	Every 6 months.	Executor: Ministry of Public Works (DGH)	- Environmental Management Agency of Subang Regency - Manpower and Transmigration Agency of Subang Regency
5.	Water quality (surface)	- TDS : 1000 mg/ltr. - TSS (Suspended Residue): 50 mg/l. - pH : 6 – 9. - BOD : 3 mg/l - COD : 25 mg/l - Temperture (PPRI No. 22 of 2021 concerning Implementation of Environmental Protection and Management Parameters)	- River Water (Irrigation Channel Kotasari Village, Pusaka Nagara) S 06° 16' 51,436" E 107° 51' 47,898" - River Water (Irrigation Channel Kertajaya Village, Tambak Dahan) S 06° 16' 53,254" E 107° 49' 12,464" - River Water (Irrigation Canal Jatibaru Village, Ciasem) S 06° 21' 00,086" E 107° 44' 23,572" - River Water (East Citarum River) S 06° 24' 19,881" E 107° 40' 57,347" - River Water (Cibuang River) S 06° 26' 55,441" E 107° 37' 20,803"	Every 6 months.	Executor: Ministry of Public Works (DGH)	Environmental Management Agency of Subang Regency

	Item	Parameters	Monitoring Location	Time and Frequency	Implementing Agency	Supervisory Agency
6.	Water quality (ground)	<ul style="list-style-type: none"> - TDS : 1000 mg/ltr. - pH : 6 – 9. - Temperature - Total coliform (PPRI No. 22 of 2021 concerning Implementation of Environmental Protection and Management Parameters)	<ul style="list-style-type: none"> - Basecamp location - Kotasari Village Settlement, Pusaka Nagara S 06° 16' 49,407'' E 107°51' 44,873'' - Kertajaya Village Settlement, Tambak Dahan S 06° 19' 53,492'' E 107° 49' 13,271 - Jati Baru Village Settlement, S 06° 21' 00,442'' E107° 44' 22,276'' - Pasirbungur Village, Purwadadi S 06° 23' 25,678'' E107° 40' 39,483'' 	Every 6 months.	Executor: Ministry of Public Works (DGH)	Environmental Management Agency of Subang Regency
7.	Vibration	<ul style="list-style-type: none"> - Vibration caused by pile works does not damage buildings around the pile points 	<ul style="list-style-type: none"> - 1 monitoring spot per package 			
8.	Ecosystem	<ul style="list-style-type: none"> - Aquatic biota sampling (plankton and benthos) 	<ul style="list-style-type: none"> - River Water (Irrigation Channel Kotasari Village, Pusaka Nagara) S 06° 16' 51,436'' E 107° 51' 47,898'' - River Water (Irrigation Channel Kertajaya Village, Tambak Dahan) S 06° 16' 53,254'' E 107° 49' 12,464'' - River Water (Irrigation Canal Jatibaru Village, Ciasem) S 06° 21' 00,086'' E 107° 44' 23,572 - River Water (East Citarum River) S 06° 24' 19,881'' E 107° 40' 57,347'' 	Every 6 months.	Executor: Ministry of Public Works (DGH)	Environmental Management Agency of Subang Regency

	Item	Parameters	Monitoring Location	Time and Frequency	Implementing Agency	Supervisory Agency
			- River Water (Cibuang River) S 06° 26' 55,441" E 107° 37' 20,803"			
Operation Phase						
9.	Air quality	- SO2: 75 g/Nm3 - CO: 4000 g/Nm3 - NO2: 65 g/Nm3 - TSP: 230 g/Nm3 (PPRI No. 22 of 2021 concerning the Implementation of Environmental Protection and Management)	- Kotasari Village Settlement, Pusaka Nagara (S 06° 16' 49,308", E 107° 51' 45,168") - Kertajaya Village Settlement, Tambak Dahan (S 06° 19' 53,497" E 107° 49' 13,276") - Jati Baru Village Settlement, Ciasem (S 06° 21' 00,547" E 107° 44' 22,208") - Pasir Bungur Settlement, Purwadadi (06° 23' 25,685" E 107° 40' 39,870") - Kosar Village Settlement, Cipendeuy (S 06° 26' 28,274" E 107° 37' 38,875")	Every 6 months	Executor: Ministry of Public Works (DGH)	Environmental Management Agency of Subang Regency
10.	Water quality (surface)	- TDS : 1000 mg/ltr. - TSS (Suspended Residue): 50 mg/ltr. - pH : 6 – 9. - BOD : 3 mg/ltr. - COD : 25 mg/ltr. (PPRI No. 22 of 2021 concerning Implementation of Environmental Protection and Management Parameters)	- Management office - Rest area	Every 6 months.	Executor: Ministry of Public Works (DGH)	Environmental Management Agency of Subang Regency

	Item	Parameters	Monitoring Location	Time and Frequency	Implementing Agency	Supervisory Agency
11.	Noise	- 55 dB (residential area) (Noise Quality Standard KepMen LH No.48/1996)	- Kotasari Village Settlement, Heritage Nagara (S 06° 16' 49,308", E 107° 51' 45,168") - Kertajaya Village Settlement, Tambak Dahan (S 06° 19' 53,497" E 107° 49' 13,276") - Jati Baru Village Settlement, Ciasem (S 06° 21' 00,547" E 107° 44' 22,208") - Pasir Bungur Settlement, Purwadadi (06° 23' 25,685" E 107° 40' 39,870") - Kosar Village Settlement, Cipendeuy (S 06° 26' 28,274" E 107° 37' 38,875")	Every 6 months.	Executor: Ministry of Public Works (DGH)	Environmental Management Agency of Subang Regency

5.8 Implementation Framework

Figure 5.8-1 and Figure 5.8-2 shows environmental management and monitoring implementation framework. Environmental measures and monitoring based on the environmental management and monitoring plan (RKL-RPL) are implemented by the contractor under the responsibility of the project proponent. Monitoring items and responsible institution for each item are shown in RKL-RPL.

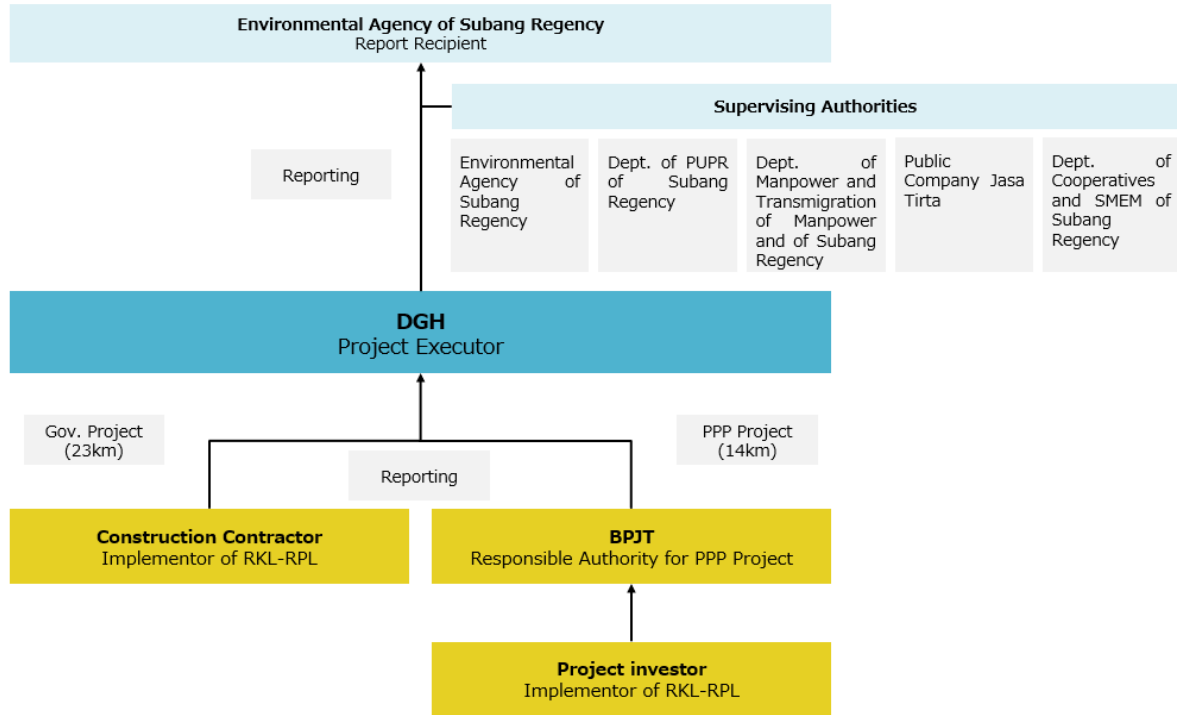


Figure 5.8-1 Monitoring Framework for Construction Phase

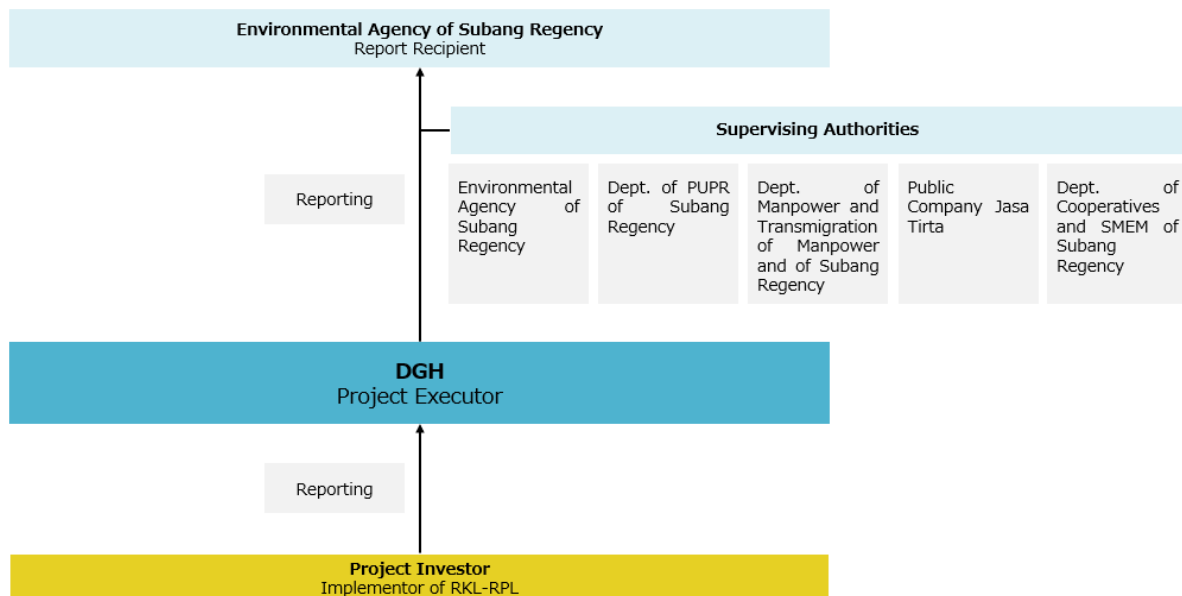


Figure 5.8-2 Monitoring Framework for Operation Phase

5.9 Stakeholder Consultation Meeting

5.9.1 Results of the First Local Stakeholder Meeting

The first local stakeholder meeting (1st SHM) has been held on August 11th, 2020, on its process of KA-ANDAL procedure. This meeting was held in accordance with the Indonesian law. Outline of the meeting is shown as table 5.9.1-1.

Table 5.9.1-1 Outline of the 1st SHM

Date	8 AM August 11th, 2020	1PM, August 11th, 2020
Venue	- The Rancasari Village Hall, Pamanukan District, Subang Regency	- Pasir Bungur Village Hall, Purwodadi District, Subang Regency
Announcement Methods	- Local Newspaper published on July 18 th , 2020 - Postings in affected villages	- Local Newspaper published on July 18 th , 2020 - Postings in affected villages
Agenda	- Explanation of the Project outline - Consultation on the draft scoping summary of KA-ANDAL (EIA) for the road project.	- Explanation of the Project outline - Consultation on the draft scoping summary of KA-ANDAL (EIA) for the road project.
Relevant Agencies	Public Works and Spatial Plan Agency of Subang Regency Environmental Management Agency of Subang Regency Development Planning Agency of Subang Regency Transportation Agency of Subang Regency Agricultural Agency of Subang Regency Local governments etc.	Public Works and Spatial Plan Agency of Subang Regency Environmental Management Agency of Subang Regency Development Planning Agency of Subang Regency Transportation Agency of Subang Regency Agricultural Agency of Subang Regency Local governments etc.
Number of participants	37 (local communities), 42 (government agency)	33 (local communities), 20 (government agency)

Source: Draft EIA Report

Jasa Marga opened comments, questions, and suggestions from participants during SHM. All comments were taken seriously and considered to address reviewing EIA report. Discussions were logged and some of questions were answered in SHM.

5.9.2 Results of the Second Local Stakeholder Meeting

The second local stakeholder meeting (2nd SHM) has been held on February 15th 2022 morning and afternoon. Even though the second meeting is not mandatory by the Indonesian law, method of both meetings were complied with JICA Guidelines. Overview of the 2nd SHM is shown in Table 5.9.1-2 2nd SHM. Major discussion and comments from participants are as Table 5.9.2-3.

Table 5.9.2-1 2nd SHM

Date	February 15 th 2022	February 15th 2022
Time	From 09.00 Until 11.00	From 14.00 Until 16.00
Method of consultation	Meeting	Meeting
Date of announcement	February 9 th 2022	February 9th 2022
Method of announcement	An invitation letter is issued and sent by the Public Works and Spatial Plan Agency of Subang Regency to the Village Office. The village office sends an invitation letter to inform the hamlet head, then the hamlet head invites community leaders and PAPs.	

	For other interested residents, information is posted at the village office. Invitations were also made orally by community leaders. As a consideration for vulnerable communities, a special request was made to the village office to invite schoolteachers and women. Invitations were also made to social NGOs. Easily accessible place selected for the meeting place	
Venue	Rancasari village hall office, Pamanukan District	Purwadadi District Hall office
Agenda	- Explanation of the project outline, - Perceptions on possible environmental and social impacts, - EIA Result.	- Explanation of the project outline, - Perceptions on possible environmental and social impacts, - EIA Result.
Language spoken	Indonesia	Indonesia
Materials	Power point materials in Indonesian language	Power point materials in Indonesian language
Number of participants	PAPs: 2 Male and 6 Female Other local people: 13 Male and 2 Female NGOs: 1 male Local authorities: 17 Male and 2 Female Relevant agency: 4 Male PU/ HK/ Local consultants: 8 Male and 3 Female	PAPs: 2 Male and 3 Female Other local people: 6 Male and 2 Female NGOs: 1 Male Local authorities: 19 Male and 4 Female Relevant agency: 11 Male PU/ HK/ Local consultants: 8 Male and 3 Female

Source: 2nd SHM records

Table 5.9.2-2 Major comments at 2nd SHM

Suggestions, Opinions and Feedback	Answer
How to handle complaints	- Comment posts will be placed - Telephone numbers listed in this material are for land activities (currently the stage is land acquisition preparation)
What would be done if the roads were damaged by the mobilization of materials?	- Damaged roads will be repaired. - Repairs will be coordinated with the department according to the road status.
Will the drainage function be disrupted by the toll road construction?	The drainage channel which is cut off by the toll road will be equipped with culverts, thus the drainage function remains
Is there a flyover/underpass	Existing roads that are cut off by toll roads will be equipped with flyovers/underpasses according to their topographical conditions.
Is it difficult to work?	The recruitment of workers will be carried out by the implementing contractor.
Make sure to secure irrigation flow from upstream to downstream	Irrigation channels that are cut off by the toll road will be installed culverts, so that the flow of water remains smooth.
What kinds of culverts are installed?	The dimensions of the culverts are adjusted to the existing conditions and have been coordinated with the responsible authorities.

Source: 2nd SHM records

Chapter 6. Advice on Preparation of Land Acquisition and Resettlement Action Plan (LARAP)

The land acquisition process for the Project has started based on the regulations in Indonesia by preparing a land acquisition planning document (DPPT) in 2020, and the location determination (penlok) was issued by the governor of West Java Province in 2021. Considering that the DPPT had not covered contents required by JICA Guidelines, a LARAP that complied with JICA Guidelines was prepared by DGH through the consulting service of the Patimban Port contracted with DGST along with the legal process. This Technical Assistance supported DGH, DGST and the consulting service team for preparing the LARAP.

6.1 Legislation for Land Acquisition and Resettlement

6.1.1 Laws and Regulations in Indonesia

Table 6.1.1-1 lists the major laws and regulations related to land acquisition. The legislation for land acquisition for public interests was largely upgraded by the enactment of the Land Acquisition Law (Law No. 2/2012) in 2012. Before its enactment, the details of the acquisition procedure and responsibilities were not clear, and problems arose, such as the amount of compensation being far below the market price. The new law solved the problems by clarifying responsibilities and the number of days required for each step. The amount of compensation also were to be calculated by independent appraisers based on market prices.

The Land Acquisition Law divides the acquisition procedure into four stages: (1) planning, (2) preparation, (3) implementation, and (4) handover. In the planning stage, the project initiator prepares a land acquisition planning document (DPPT) that describes the size of the land to be acquired, acquisition costs, etc., and submits it to the provincial government. In the preparation stage, the provincial government notifies the affected residents, conducts an initial survey and public consultation, and then announces the acquisition of the land. This announcement is called as penlok (penetapan lokasi) which means location determination, and it legally determines the acquisition of the land for the project. In the implementation phase, the procedure is transferred to the National Land Agency (Badan Pertanahan Nasional: BPN) of the Ministry of Agrarian Affairs and Spatial Planning, which conducts an inventory survey of the affected assets, price assessment, negotiation, and payment, and then the land is transferred to the project initiator in the stage of handover.

Table 6.1.1-1 Legislation in Indonesia Related to Land Acquisition and Resettlement

Category	Name
Law	<ul style="list-style-type: none"> - Law No.5/1960 on Basic Agrarian Principles - Law No. 2/2012 on Land Acquisition - Law No.11/2021 on Job Creation (Amendment of Law No.2/2012)
Regulation	<ul style="list-style-type: none"> - Presidential Regulation No.62/2018 on Handling Community Social Impact in the Framework of Provision of Land for National Development - Government Regulation No.19/2021 on Land Acquisition for Development for Public Interest - Regulation of Minister of Agrarian Affairs and Spatial Planning and Head of National Land Agency No.19/2021 on Provisions for Implementation of Government Regulation No.19/2021 on Land Acquisition for Development for Public Interest
Standard for assessment	<ul style="list-style-type: none"> - Indonesian Assessment Standard 204 (Standar Penilaian Indonesia: SPI 204)

6.1.2 Gap between Indonesian Law and Regulations and JICA Guidelines

The Land Acquisition Law and the relevant regulations and standards shows that

compensation amount for the loss of land and assets is equivalent to the replacement cost which is required by JICA Guidelines. On the other hand, it was concerned that the eligibility to be compensated and the policies for assistance might have gaps with JICA Guidelines because the regulations in Indonesia mainly focus on land acquisition but little on resettlement and livelihood support. In order to fill the gaps, each type of affected persons required to be compensated and assisted under JICA Guidelines were listed in Table 6.1.2-1 comparing with the policies under the regulation in Indonesia.

As the results of the gap analysis and confirmation with DGH, it was identified that following points need to be considered to comply with JICA Guidelines. DGH is requested to coordinate with relevant agencies to fulfill the requirements of JICA Guidelines.

1) Workers/employees who do not directly possess rights for the lands and/or structures:

Although the compensation for those people is not clearly mentioned in the law and regulations, it was confirmed with DGH that the compensation for the loss of income is available based on the appraisal standards in Indonesia. The compensation needs to be ensured for the Project as many workers have been identified.

2) Affected persons without legal rights for using the land (illegal occupants):

Presidential Regulation No.62/2018 allows those persons to be eligible for compensation if they have occupied the land at least 10 years. The persons identified for the Project need to be eligible regardless of the length of occupation based on JICA Guidelines.

3) Livelihood restoration assistance:

JICA Guidelines require to provide assistances to mitigate the impacts on livelihoods in addition to compensation to loss of assets. The Patimban Port Development Project has offered a livelihood restoration program (vocational skill/technical training) to all affected people including land owners, workers, and fishers, etc. Such assistance needs to be provided to those whose livelihood is affected by the Project including landowners, land users, and workers.

4) Socially vulnerable affected persons (women-headed household, elderly, persons with low income):

Since there is no clear statement for considering vulnerable persons in the regulations related to land acquisition, it is necessary to ensure the assistance for those persons to alleviate the impacts. The assistance is proposed to be addressed in the livelihood restoration program mentioned above.

Table 6.1.2-1 Gaps in Context of Eligibility for Compensation between Indonesian Laws and JICA Guidelines

Types of affected people eligible by JICA Guidelines	Policy under Indonesian laws (Law No.2/2012)	Gaps and challenges
Land owner	Compensated	Non
Land user (tenant)	Compensated for crops, structures attached to the land such as houses, and other losses.	Non
Housing and/or buildings owners	Compensated for structures such as houses and other loss. Relocation costs are also compensated.	Non
Workers and employees who do not directly possess rights for the lands and/or structures	Not clearly mentioned in the law, but able to be compensated for the loss of income.	Need to ensure compensation for the loss of income
Affected vulnerable persons (e.g. women-headed household, elderly, persons with low income)	Not legislated	Need special consideration
Illegal occupants	Eligible if they have occupied the land at least 10 years and confirmed by community	Need to compensate regardless of the length of

	leaders and/or land owners.(Presidential Regulation No.62/2018)	occupation.
Persons whose livelihood is affected	Livelihood restoration assistance after the land acquisition and relocation is not legislated.	Assistances such as livelihood restoration program are required to restore the livelihoods to be the same or better level.

6.2 Scope of Impact of Land Acquisition and Resettlement

Impacts caused by the land acquisition for the Project were summarized as follows based on the survey results presented in the LARAP.

6.2.1 Affected Population

Table 6.2.1-1 presents the number of affected persons identified by the census survey conducted from October 2021 to January 2022. In total, 2,570 households were identified to be affected which consist of 1,359 individual landowners, 388 tenants, and 823 workers. The total affected population including the household members was 9,418 excluding 33 household members who could not be surveyed. Out of those people, 1,553 people (484 households) need relocation of houses.

There were 12 illegal occupants identified as tenants. They were living and/or operating business without permission in the government-owned land.

Table 6.2.1-1 Number of Affected Persons

		Number of affected households		Number of affected persons including household members
			Total	
Landowner	Individual	1359	1359	4594
Tenant	Legal land user	332	388	1940
	Illegal occupant	12		
	Unknown (Not surveyed)	44		
Worker	Agricultural worker	782	823	2851 33+
	Shop worker	8		
	Unknown (Not surveyed)	33		
Total		2570		9418+
Need relocation of houses		484		1553
Need relocation of shops/business places	Land owner	37		118
	Tenant	37		143

+: number of household member is unknown

Source: Draft LARAP, February 2022

6.2.2 Affected Assets

Table 6.2.2-1 shows the number of affected land plots and area. In total 2,375 plots equivalent to 340.04 ha are identified to be affected. Most of the areas were used as paddy field followed by garden, plantation, and yard.

Table 6.2.2-2 and 6.2.2-3 show the number of affected buildings and plants, respectively. In total, 626 buildings are identified as affected. Out of them, 543 buildings are owned by the landowners and 83 belongs to tenants who rent the land from landowners. Most of the buildings are residential houses, shops, and/or business places.

Table 6.2.2-1 Number of Affected Land Plots and Area by Land Use

Land use	Number of plots	Area (ha)
Paddy field	1329	216.51
Garden	201	40.63
Plantation	44	35.37
Yard	540	26.00
Road	106	11.87
River	137	7.29
Pond	10	1.59
Soccer field	1	0.26
Embankment	1	0.17
Grave	3	0.14
Lake	1	0.08
Rail	1	0.07
Pipeline	1	0.06
Total	2375	340.04

Source: Draft LARAP, February 2022

Table 6.2.2-2 Number of Affected Buildings

Type of building	Building owner		Total
	Land owner	Tenant	
Residential house	426	31	457
Residential house and shop/business place	54	32	86
Shop/business place	9	18	27
Hall	37		37
Garage	3		3
Warehouse	2	1	3
Cage	1		1
Village office	1		1
Islamic school	1	1	2
Mosque	5		5
Small mosque	3		3
Security post	1		1
Total	543	83	626

Source: Draft LARAP, February 2022

Table 6.2.2-3 Number of Affected Plants

Type of plants	Plant owner		Total
	Land owner	Tenant	
Annual plant/hardwood	17,150	8,869	26,019
Fruit plant	19,601	3,300	22,901
Total	36,751	12,169	48,920

Source: Draft LARAP, February 2022

6.2.3 Socio-Economic Conditions of Affected Persons

Socio-economic conditions of affected persons were surveyed by questionnaire and the major results were summarized in Table 6.2.3-1,2,3,4, and 5. The sample group was all of the 1359 landowners (100%), 344 tenants (89% of 388), and 790 workers (96% of 823).

The age of around the half of the affected persons was in the range of 41-60 (Table 6.2.3-1). 74.6% of them were male while 25.4% were female (Table 6.2.3-2). Livelihood means of 64.2% of the landowners were farmers while 41.6% as the most major of tenants were business owners/traders. Almost all (92.0%) of the workers answered their main livelihood means were labors (Table 6.2.3-3).

Most of the landowners (97.1%) answered they didn't have other household members who earn incomes. Majority of the tenants (62.2%) and workers (73.4%) also answered that they didn't have another working member although some of them (25.3% of tenants and 20.1% of workers) responded they have (Table 6.2.3-4).

The major range of monthly income of affected households was Rp. 2,000,000 - 4,000,000. Households who have income more than Rp. 8,000,000 were rare especially among workers (Table 6.2.3-5).

Table 6.2.3-1 Age of Affected Persons

	Age				Total
	<20	21-40	41-60	>60	
Land owner	7 (0.5%)	479 (35.2%)	645 (47.5%)	228 (16.8%)	1359
Tenant	1 (0.3%)	89 (25.9%)	211 (61.3%)	43 (12.5%)	344
Worker	11 (1.4%)	259 (32.8%)	451 (57.1%)	69 (8.7%)	790
Total	19 (0.8%)	827 (33.2%)	1307 (52.4%)	340 (13.6%)	2493

Source: Draft LARAP, February 2022

Table 6.2.3-2 Gender of Affected Persons

	Gender		Total
	Male	Female	
Land owner	827 (60.9%)	532 (39.1%)	1359
Tenant	291 (84.6%)	53 (15.4%)	344
Worker	741 (93.8%)	49 (6.2%)	790
Total	1859 (74.6%)	634 (25.4%)	2493

Source: Draft LARAP, February 2022

Table 6.2.3-3 Livelihood Means of Affected Households

Main occupation	Landowner	Tenant	Worker	Total
Farmer	872 (64.2%)	81 (23.5%)	42 (5.3%)	995 (39.9%)
Business owner/trader	185 (13.6%)	143 (41.6%)	17 (2.2%)	345 (13.8%)
Labor	87 (6.4%)	7 (2.0%)	727 (92.0%)	821 (32.9%)
Employee	84 (6.2%)	53 (15.4%)	-	137 (5.5%)
Others	116 (8.5%)	20 (5.8%)	4 (0.5%)	140 (5.6%)
Not working	15 (1.1%)	40 (11.6%)	-	55 (2.2%)
Total	1359	344	790	2493

Source: Draft LARAP, February 2022

Table 6.2.3-4 Number of Working Household Members

Numbers of working members	Landowner	Tenant	Worker	Total
1	1319 (97.1%)	214 (62.2%)	580 (73.4%)	2113 (84.8%)
2	27 (2.0%)	87 (25.3%)	159 (20.1%)	273 (11.0%)
3	13 (1.0%)	32 (9.3%)	37 (4.7%)	82 (3.3%)
4		10 (2.9%)	11 (1.4%)	21 (0.8%)
5		1 (0.3%)	3 (0.4%)	4 (0.2%)
Total	1359	344	790	2493

Source: Draft LARAP, February 2022

Table 6.2.3-5 Average Monthly Income of Affected Household

Average monthly income (Rp.)	Landowner	Tenant	Worker	Total
≤ 2,000,000	163 (12.0%)	71 (20.6%)	217 (27.5%)	451 (18.1%)
2,000,000 – 4,000,000	556 (40.9%)	136 (39.5%)	413 (52.3%)	1105 (44.3%)
4,000,000 – 6,000,000	256 (18.8%)	55 (16.0%)	107 (13.5%)	418 (16.8%)
6,000,000 – 8,000,000	120 (8.8%)	34 (9.9%)	35 (4.4%)	189 (7.6%)
8,000,000 – 10,000,000	103 (7.6%)	20 (5.8%)	9 (1.1%)	132 (5.3%)
> 10,000,000	161 (11.8%)	28 (8.1%)	9 (1.1%)	198 (7.9%)
Total	1359	344	790	2493

Source: Draft LARAP, February 2022

6.2.4 Vulnerable Affected Persons

Vulnerable affected persons were defined as follows in the LARAP. Those persons were identified through the socio-economic survey and the numbers are tabulated in Table 6.2.4-1.

- Persons over 60 years old,
- Female household heads (widows),
- Household heads with income below IDR 1,000,000 per month,
- Persons with special needs (persons with disabilities).

Table 6.2.4-1 Number of Vulnerable Affected Persons

	Landowner	Tenant	Worker	Total
Persons over 60 years old	228	43	69	340
Widow	83	19	6	108
Household heads with income below IDR 1,000,000 per month	163	4	8	175
Persons with special needs (persons with disabilities)	6	5	0	11
Total vulnerable persons	480	71	83	634

Source: Draft LARAP, February 2022

6.3 Compensation Policy

6.3.1 Key Principles

Based on JICA Guidelines, the key principles for the compensation and resettlement of this Project are confirmed as follows:

- (i) Land acquisition and involuntary resettlement are to be **avoided** where feasible, or **minimized**, by identifying possible alternative project designs that have the least adverse impact on the communities in the project area.
- (ii) Where displacement of households is unavoidable, all Project Affected Persons (PAPs) (including communities) losing assets, livelihoods or resources will be **fully compensated** and assisted so that they can improve, or at least restore, their former economic and social conditions.
- (iii) Compensation and rehabilitation support will be provided to any PAPs, that is, any person or household or business which on account of project implementation would have his, her or their:
 - Standard of living adversely affected;
 - Right, title or interest in any house, interest in, or right to use, any land (including premises, agricultural and grazing land, commercial properties, tenancy, or right in annual or perennial crops and trees or any other fixed or moveable assets, acquired or possessed, temporarily or permanently;
 - Income earning opportunities, business, occupation, work or place of residence or habitat adversely affected temporarily or permanently; or
 - Social and cultural activities and relationships affected or any other losses that may be identified during the process of resettlement planning.
- (iv) All affected people will be eligible for compensation and rehabilitation assistance, **irrespective of tenure status**, social or economic standing and any such factors that may discriminate against achievement of the objectives outlined above. Lack of legal rights to the assets lost or adversely affected tenure status and social or economic status will not bar the PAPs from entitlements to such compensation and rehabilitation measures or resettlement objectives. All PAPs residing, working, doing business and/or cultivating land within the project impacted areas **as of the date of the latest census** and inventory of lost assets(IOL), are entitled to compensation for their lost assets (land and/or non-land assets), at replacement cost, if available and restoration of incomes and businesses, and will be provided with rehabilitation measures sufficient to assist them to improve or at least

- maintain their pre-project living standards, income-earning capacity and production levels.
- (v) PAPs that **lose only part of their physical assets** will not be left with a portion that will be inadequate to sustain their current standard of living. The minimum size of remaining land and structures will be agreed during the resettlement planning process.
 - (vi) People **temporarily affected** are to be considered PAPs and resettlement plans address the issue of temporary acquisition.
 - (vii) The Resettlement Plan will be translated into local languages and disclosed for the reference of PAPs as well as other interested groups.
 - (viii) Payment for land and/or non-land assets will be based on the principle of **replacement cost**.
 - (ix) Resettlement assistance will be provided not only for immediate loss, but also for a **transition period** needed to restore livelihood and standards of living of PAPs. Such support could take the form of short-term jobs, subsistence support, salary maintenance, or similar arrangements.
 - (x) The resettlement plan must consider the needs of those most **vulnerable** to the adverse impacts of resettlement (including the poor, those without legal title to land, ethnic minorities, women, children, elderly and disabled) and ensure they are considered in resettlement planning and mitigation measures identified. Assistance should be provided to help them improve their socio-economic status.
 - (xi) PAPs will be involved in the process of developing and implementing resettlement plans.
 - (xii) PAPs and their communities will be **consulted** about the project, the rights and options available to them, and proposed mitigation measures for adverse effects, and to the extent possible be involved in the decisions that are made concerning their resettlement.
 - (xiii) Adequate **budgetary support** will be fully committed and made available to cover the costs of land acquisition (including compensation and income restoration measures) within the agreed implementation period. The funds for all resettlement activities will come from the Government.
 - (xiv) **Displacement does not occur before provision of compensation and of other assistance** required for relocation. Sufficient civic infrastructure must be provided in resettlement site prior to relocation. Acquisition of assets, payment of compensation, and the resettlement and start of the livelihood rehabilitation activities of PAPs, will be completed prior to any construction activities, except when a court of law orders so in expropriation cases. (Livelihood restoration measures must also be in place but not necessarily completed prior to construction activities, as these may be ongoing activities.
 - (xv) **Organization and administrative arrangements** for the effective preparation and implementation of the resettlement plan will be identified and in place prior to the commencement of the process; this will include the provision of adequate human resources for supervision, consultation, and monitoring of land acquisition and rehabilitation activities.
 - (xvi) Appropriate reporting (including auditing and redress functions), **monitoring and evaluation mechanisms**, will be identified and set in place as part of the resettlement management system. An external monitoring group will be hired by the project and will evaluate the resettlement process and final outcome. Such groups may include qualified NGOs, research institutions or universities.

6.3.2 Entitlement Matrix

Table 6.3.2-1 shows the entitlement matrix in the LARAP which presents compensation policies for each type of losses to be entitled.

Table 6.3.2-1 Entitlement Matrix

No.	Impact/Loss Category	Entitled Party	Compensation Policy	Legal Basis	Responsible Institution
A. LOSSES OF LAND					
1	Losses of land including agricultural land, and settlements	Those who have title certificates or those whose ownership of land is recognized by the state as full rights, including people who occupy state land in good faith.	<ul style="list-style-type: none"> Cash compensation equal to fair replacement value and reflects fair market value at the time of compensation payment (assessed by a licensed independent property appraiser from MAPPI); or replacement of land with land that is at least similar in nature to the acquired land in terms of value, productivity, location, and certification. Financial assistance to renew land ownership documents (land certificates and documents recognized as full rights) for the remaining areas of land owned by residents or other entitled parties. If the remaining land is no longer suitable for use, the Project will take over the entire land at an equivalent replacement cost (Law No. 2 of 2012 Article 35) Tax incentives are given to all entitled parties if they do not file a lawsuit on the decision of the location determination and on the decision of the type and/or compensation amount. 	<p>Law No.2 Year 2012</p> <p>Law on Job Creation (Chapter VIII, Article 122)</p> <p>Government Regulation No. 19/2021</p> <p>KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent Appraiser Team</p>
2	Lands owned by the state/state enterprises	Lands owned/controlled by the government, state enterprises, village treasury	<ul style="list-style-type: none"> Cash compensation equal to the replacement value; or; Replacement of land of equal or higher value (in terms of value, productivity, location and certification). 	<p>Government Regulation No. 19/2021</p> <p>Law on Job Creation (Chapter VIII, Article 122)</p> <p>Presidential Regulation No. 62 of 2018</p> <p>Minister of Agrarian Affairs/National Land Agency No. 19 of 2021</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent Appraiser Team</p>

No.	Impact/Loss Category	Entitled Party	Compensation Policy	Legal Basis	Responsible Institution
B. LOSSES OF TREES/FOOD PLANTS					
1	Losses of Trees/Food Plants	Owners, regardless of land tenure status (with certificates or rights that can be recognized by the government, illegal occupants, squatters/no legal rights to land).	<ul style="list-style-type: none"> Annual Food Crops: compensation equal to replacement cost based on prevailing market prices. Perennial Crops: compensation equal to replacement cost taking into account productivity and age. Timbers/trees: compensation equal to prevailing market prices based on age, species and trunk diameter at chest height. 	<p>Law No.2 Year 2012</p> <p>Law on Job Creation (Chapter VIII, Article 122)</p> <p>Government Regulation No. 19/2021</p> <p>Minister of Agrarian Affairs/National Land Agency Regulation No. 19 of 2021.</p> <p>KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent Appraiser Team</p>
C. LOSSES OF STRUCTURES					
1	Loss of primary structures (houses, offices, shops) and secondary structures (fences, driveways, additional roofs, warehouses, etc.)	Owners of affected structures, regardless of land ownership status	<ul style="list-style-type: none"> Compensation equivalent to full replacement cost will be determined based on the market price of the materials and the applicable worker costs for demolition, removal and rebuilding (i.e. at the time of handing over the compensation). There will not be depreciation; or Settlements options with access equals to the employment and production opportunities. For partially affected structures, compensation in the form of repair costs for parts of the structure that are not affected in addition to compensation equal to the replacement price for the affected parts in the same building. Compensation for affected electricity, telephone and other services is based on applicable disconnection and reconnection fees. 	<p>Law No.2 Year 2012</p> <p>Elucidation of Law No. 2 of 2012 Article 35, 40</p> <p>Law on Job Creation (Chapter VIII, Article 122)</p> <p>Government Regulation No. 19/2021</p> <p>Minister of Agrarian Affairs/National Land Agency Regulation No. 19 of 2021</p> <p>KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent Appraiser Team</p>

No.	Impact/Loss Category	Entitled Party	Compensation Policy	Legal Basis	Responsible Institution
		Entitled parties who are transferred/relocated regardless of land ownership status	<ul style="list-style-type: none"> Financial assistance for moving, if the Project cannot provide a truck or means of transportation to transport goods to a new place. 	<p>Law No.2 Year 2012</p> <p>Elucidation of Law No. 2 of 2012</p> <p>Law on Job Creation (Chapter VIII, Article 122)</p> <p>Government Regulation No. 19/2021</p> <p>Presidential Regulation No. 62 of 2018</p> <p>Minister of Agrarian Affairs/National Land Agency Regulation No. 19 of 2021</p> <p>KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent Appraiser Team</p> <p>The Government of West Java Province</p>
		Tenants of house/shop regardless of land ownership	<ul style="list-style-type: none"> Financial assistnace equals to 12 months of rental cost 	<p>Law No.2 Year 2012</p> <p>Law on Job Creation (Chapter VIII, Article 122)</p> <p>Government Regulation No. 19/2021</p> <p>Minister of Agrarian Affairs/National Land Agency Regulation No. 19 of 2021</p> <p>KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)</p> <p>Based on SPI 204 other things that have not been regulated in the SPI can be</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent Appraiser Team</p>

No.	Impact/Loss Category	Entitled Party	Compensation Policy	Legal Basis	Responsible Institution
				calculated the amount of rent as long as there is a planning document that underlies it President Regulation No. 62 Year 2018	
2	Infrastructure and public facilities/things attached to the ground	Government/State enterprises/communal property and assets (e.g. schools, mosques, village offices, electricity poles, etc.)	<ul style="list-style-type: none"> Rebuilding facilities or providing cash compensation based on agreement with affected parties. 	Law No.2 Year 2012 Law on Job Creation (Chapter VIII, Article 122) Government Regulation No. 19/2021 Minister of Agrarian Affairs/National Land Agency Regulation No. 19 of 2021	Director General of Highways National Land Agency/ Land Acquisition Committee Independent Appraiser Team Regional Government
3	Graves	Owners	A consultation with village officials and residents was carried out prior to the acquisition of land for public burials. Financial assistance to move the graves including costs for the ceremony.	Law Number 2/2012 Article 33 Law on Job Creation (Chapter VIII, Article 122) Government Regulation No. 19/2021 Minister of Agrarian Affairs/National Land Agency Regulation No. 19 of 2021	Director General of Highways National Land Agency/ Land Acquisition Committee Independent Appraiser Team Regional Government
D. TEMPORARY IMPACTS DURING THE CONSTRUCTION					
1	Temporary Impacts on Land during the Construction	For those who have official legal rights (certificates) to land or those whose claims to the land are recognized as full rights.	The payment of the rent of the land affected by the construction is based on the applicable rental fee and the agreement with the land owner. For productive land, the rental fee will not be less than the net profit that would be generated from the affected productive land. It will be paid monthly	Contract documents / agreements with civil works contractors	Construction Contractor

No.	Impact/Loss Category	Entitled Party	Compensation Policy	Legal Basis	Responsible Institution
			<p>or annually continuously during the rental period</p> <p>Compensation for acquiring non-land assets (trees/plants, buildings) will be provided at replacement cost</p> <p>The land will be returned to its pre-project condition or even better. Restoration costs are added to the total compensation or borne by the contractor</p>		
		Those who do not have legal rights and rights that can be recognized as full ownership	<ul style="list-style-type: none"> No land rental fees during the impact period The land will be restored as it was before the project, or even better. 	Contract documents/agreements with construction contractors and land owners.	Construction Contractor
E. OTHER LOSSES					
1	Loss of business income and work	Business Owners and Employees, regardless of land ownership status	<p>Loss or closure of permanent business (restaurants, cafes, stalls/shops) premises: Compensation in cash based on loss of business investment (capital, other modes of production) added to the total loss of income for a minimum of 3 months and transition assistance according to the time needed to stabilize the business (Assessed by a MAPPI certified Independent Appraisal team)</p>	<p>Government Regulation No. 19/2021</p> <p>KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent assessment team</p> <p>Regional Government</p>
			<p>Temporary loss of business: Compensation in cash based on the lost income expected to be received from the use of the affected assets.</p>	<p>Indonesian Valuation Standard 204 (SPI 204) 2018</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition Committee</p> <p>Independent Appraiser Team</p> <p>Regional Government</p>
			<p>Permanent Loss of Job: Compensation in cash equivalent to total lost of work income multiplied by at least 3 months, or Profession change: Cash compensation based on fees</p>	<p>Indonesian Valuation Standard 204 (SPI 204) 2018</p>	<p>Director General of Highways</p> <p>National Land Agency/ Land Acquisition</p>

No.	Impact/Loss Category	Entitled Party	Compensation Policy	Legal Basis	Responsible Institution
			required for a professional change equivalent to the previous profession based on the assessment of a licensed appraiser		Committee Independent Appraiser Team Regional Government
			Temporary loss of employees: Compensation is equivalent to income lost during the interruption.	Indonesian Valuation Standard 204 (SPI 204) 2018	Director General of Highways National Land Agency/ Land Acquisition Committee Independent Appraiser Team Regional Government
2	Loss of emotional attachment to assets (solatium)	Entitled parties who have lost emotional attachment to the affected assets (land, structures and plants)	Additional compensation of 10% - 30% of the total compensation for the affected physical assets. This compensation will include financing for: <ul style="list-style-type: none"> • Transitional living allowance equivalent to 3 months of basic living expenses (poverty line in the province per household member) which will be included in the solatium. • Reduction of building depreciation. 	KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)	Director General of Highways National Land Agency/ Land Acquisition Committee Independent Appraiser Team
3	Transaction Fee	Entitled parties who lose land and non-land assets	Assistance to cover administrative costs, renewal of land ownership (transfer fees) for remaining land, land clearing	KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)	Director General of Highways National Land Agency/Land Acquisition Committee Independent Appraiser Team :
4	Compensation for waiting period (interest)	Entitled parties who receive late compensation payment	Cash compensation based on risk free interest, government bank interest	KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)	Director General of Highways National Land Agency /Land Acquisition Committee

No.	Impact/Loss Category	Entitled Party	Compensation Policy	Legal Basis	Responsible Institution
					Independent Appraiser Team
5	Other physical losses	Owners, regardless of land ownership status	Compensation for repair cost	KEPI and SPI Edition VII-2018 (SPI 204 and PPI 04)	Director General of Highways National Land Agency /Land Acquisition Committee Independent Appraiser Team
6	Loss of resource base (high risk of impoverishment)	Entitled parties who lose 10% or more of their assets or total sources of productive income; Entitled parties who are poor and vulnerable, regardless of severity of impact	Participating in livelihood restoration program (LRP) Given the opportunity for project related work	Law Number 11 of 2009 about Social Welfare Government Regulation Number 38 of 2007 JICA Safeguard Policy	Director General of Highways Independent Appraiser Team

Source: Draft LARAP, February 2022

6.3.3 Cut-Off Date

The “cut-off date” refers to the date prior to which the occupation or use of the project area makes the occupants/users eligible to the entitlement for compensation.

For the Project, the cut-off date was announced as the date of the public consultations held for conducting census, socio-economic, and inventory survey at each village. The cut-off date was explained in the consultation meetings and the meeting minutes with the date were acknowledged by the heads of the villags. Table 6.3.3-1 shows the date for each village.

Meanwhile, the legal cut-off date in Indonesia corresponds to the date of penlok (location determination) because transferring of rights of land/assets is restricted after penlok. For the Project, penlok was announced by the governor of West Java Province on 29 December 2021. It is also recognized as the cut-off date on a legal basis.

Table 6.3.3-1 A List of Cut-Off Dates for Each Village

No.	Area (Sub-District/Village)	Cutoff Date
I	Cipeundeuy Sub-District	
1.	Sawangan Village	25 – 27 December 2021
2.	Kosar Village	18 November 2021
II	Pabuaran Sub-District	
3.	Karanghegar Village	21 October 2021
III	Purwadadi Sub-District	

No.	Area (Sub-District/Village)	Cutoff Date
4.	Panyingkiran Village	09 November 2021
5.	Rancamahi Village	11 November 2021
6.	Pasirbungur Village	10 November 2021
IV	Patokbeusi Sub-District	
7.	Rancabango Village	11 November 2021
V	Cikaum Sub-District	
8.	Pasirmuncang Village	15 November 2021
9.	Mekarsari Village	12 – 13 November 2021
VI	Ciasem Sub-District	
10.	Jatibaru Village	16 November 2021
VII	Tambakdahan Sub-District	
11.	Tanjungrasa	21 October 2021
12.	Wanjaya Village	22 October 2021
13.	Gardumukti Village	21 October 2021
14.	Mariuk Village	20 October 2021
15.	Kertajaya Village	19 October 2021
VIII	Pamanukan Sub-District	
16.	Bongas Village	29 October 2021
17.	Rancasari Village	29 October 2021
18.	Rancahilir Village	31 October 2021
IX	Pusakajaya Sub-District	
19.	Pusakajaya Village	01 – 03 November 2021
X	Pusakanagara Sub-District	
20.	Kotasari Village	01 – 03 November 2021

Source: Draft LARAP, February 2022

6.3.4 Livelihood Restoration Program

Since the land acquisition and resettlement will affect people's livelihoods such as farming and shop operations, the Project has committed to the people whose livelihoods are affected to provide a Livelihood Restoration Program (LRP) in addition to monetary compensation for the loss. The LRP is to reduce the social risks due to the land acquisition and resettlement by securing the income and production through trainings so that the people could maintain or improve the living conditions during and after the Project.

The target people of the LRP consist of landowners, tenants, and workers whose livelihoods are affected. The eligibility for participation in the LRP is defined as follows:

- Landowners, tenants, and workers whose livelihood is affected more than 10%, and/or
- Socially vulnerable affected persons such as women-headed and households with low income.

According to the initial survey results to overview the affected people's opinions on the LRP, 95.4% of landowners and 98.0% of tenants and workers showed their intention to participate in the LRP. More than 80% of the people answered they were interested in trainings for increasing agricultural production rather than production management, market enhancement, processing agricultural products, and entrepreneurship. Out of the seven likely menus of skill trainings listed in the questionnaire, the people tended to chose builder (masonry) training, security training, and heavy equipment operator

training more frequently than computer, English, accounting/finance, and sewing trainings.

The detailed plan of the LRP is discussed in section 6.10.

6.3.5 Consideration for Vulnerable Affected Persons

The affected persons include socially vulnerable persons such as old aged more than 60 years or women-headed households as well as poor households with income below Rp.1,000,000 per month. Vulnerable affected persons are entitled for participating in the LRP regardless the extent of impacts. The contents of the support for the vulnerable households shall be tailored upon each situation as much as possible.

6.4 Grievance Handling Mechanism

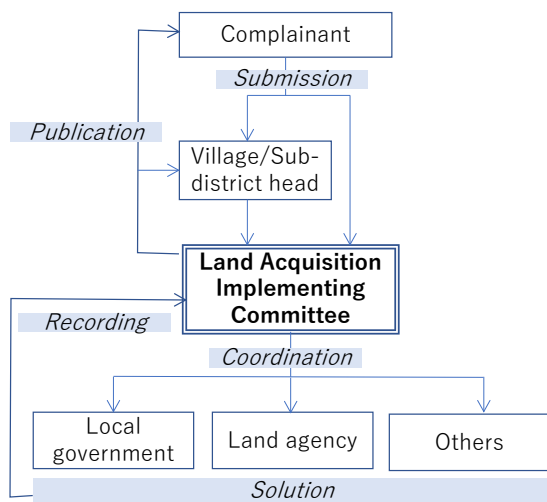
The grievance handling mechanisms are presented in Figure 6.4-1. For the grievance related to the land acquisition, the Land Acquisition Implementing Committee will handle the mechanism. The Committee is led by National Land Agency (BPN) and will consist of regional offices of BPN, Land Acquisition Working Unit established in DGH, local governments, and the other relevant agencies. After the construction project is initiated, DGH Regional Office (Balai) will manage the construction. It will handle the grievance mechanism for the construction.

Any person who has complain can submit official grievance in written form by filling the 'Grievance Collecting Form' available at village/sub-district office, and construction contractor's office after the construction is commenced. If the complainant needs support of village/sub-district head for filling the form, he/she can fill the form together with the village/sub-district head. The collecting form is submitted to Land Acquisition Working Unit in the Committee or Balai by any measures such as by hand delivery, mail, fax and email.

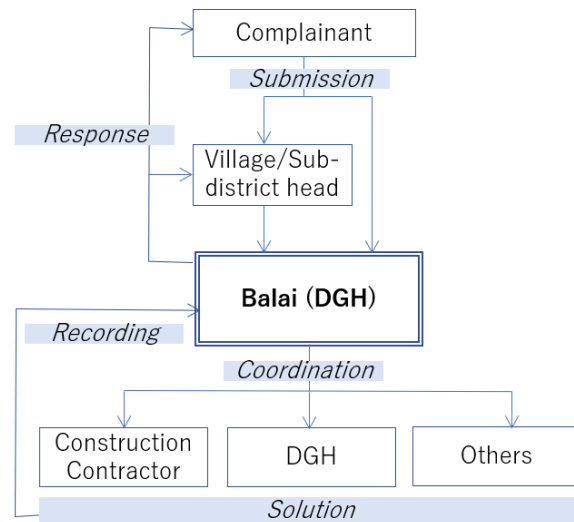
After receiving the form, Land Acquisition Working Unit in the Committee or Balai shall coordinate with the relevant agencies (local governments, land agencies, construction contractors, etc.) suitable for the contents of the received grievance. The officer of the Working Unit/Balai shall record each action by filling the 'Grievance Tracking Form'. The solution shall be found within 15 working days in principle. After it reaches to the final solution, the Working Unit/Balai shall fill the column of solution and report to the complainant directly or through village /sub-district head.

After the process reaches to the final solution, the Working Unit/Balai shall fill the 'Publication Form of Grievance Handling Results' and disseminate at public space such as announcement boards at the project office and/or village offices.

Land Acquisition Grievance Handling Mechanism



Grievance Handling Mechanism for Construction



Notes:

Land Acquisition Implementing Committee will consist of BPN, Land Acquisition Working Unit in DGH, local governments, and the other relevant agencies.

Source: Draft LARAP, February 2022

Figure 6.4-1 Grievance Handling Mechanism

6.5 Institution Arrangement for the LARAP Implementation

Table 6.5-1 shows responsible agencies at each stage of the land acquisition. In the planning stage, DGST together with DGH works for preparing the LARAP report for the Project. In the preparation stage, the provincial government takes responsibility for issuing location determination. In the implementation stage, the responsibility is transferred to the National Land Agency (BPN) for the inventory survey and appraisal. The compensation payment is also handled by BPN and the implementation team, while the compensation budget will be prepared by the PPP investor under the responsibility of DGH and Indonesia Toll Road Authority (BPJT).

Table 6.5-1 Responsible Agencies for LARAP Implementation

Stage	Responsible Agency	Activities
Planning stage	DGST	<ul style="list-style-type: none"> Census, socio-economic, and asset survey Conducting public consultations Preparation of LARAP report
	DGH	<ul style="list-style-type: none"> Preparation of DPPT and LARAP reports Submission to provincial government
Preparation stage	West Java Province and Preparatory Team	<ul style="list-style-type: none"> Conducting public consultations Location determination (Penlok)
Implementation stage	BPN and Implementation Team	<ul style="list-style-type: none"> Conducting inventory survey Determination of independent appraisal team Negotiation and compensation payment
	DGH, BPJT PPP private investor	<ul style="list-style-type: none"> Preparation of budget for compensation

Source: Draft LARAP, February 2022

6.6 Implementation Schedule

Table 6.6-1 shows the implementation schedule.

Table 6.6-1 Implementation Schedule

NO.	ACTIVITY STEP	EXECUTION TIME
I	PLANNING STAGE	
1.	Initial Socialization of the Activity Plan and Submission to MUSPIKA and the affected villages.	27 August 2021
2.	Survey measurement and identification of affected assets	September – November 2021
3.	Socialization Stage – 1	October – November 2021
4.	Socio-Economic Survey and Asset Survey	October 2021 – January 2022
5.	Completion of LARAP Draft	4 February 2022
6.	LARAP Draft discussion with the Director General of Sea Transportation of the Ministry of Transportation, JICA and the Director General of Highways of the Ministry of PUPR	10 February 2022
7.	Socialization Stage – 2	February 2022
8.	Final Submission of LARAP Documents to the Director General of Sea Transportation of the Ministry of Transportation and JICA	March 2022
II	PREPARATION STAGE	
1.	Land Acquisition Planning Document (DPPT) Received by Governor of West Java Province	September 2021
2.	Formation of the Land Acquisition Preparation Team (no later than 5 days since the DPPT is received by the Governor)	September 2021
3.	The Plan announcement for Patimban Access Toll Road development to the Community	September – October 2021
4.	Initial Identification and Data Collection of Entitled Parties and Land Acquisition Objects (30 days)	October 2021
5.	Public Consultation on Development Plan	October - November 2021
6.	Location Determination	December 2021
III	IMPLEMENTATION STAGE	
1.	Preparation for the Land Acquisition Implementation	July 2022
2.	Formation of Land Acquisition Implementation Team (5 days)	July 2022
3.	Inventory and identification (30 Days)	July - August 2022
4.	Announcement of Definitive affected people and Refutation Period (14 Days)	September 2022
5.	Re-inventory and Re-identification if there is a Rebuttal (14 Days)	September - October 2022

NO.	ACTIVITY STEP	EXECUTION TIME
6.	The Process of Selection and Appointment of Independent Appraisers (30) and Appraisal of Land Acquisition Objects (30 days)	August – September 2022
7.	Deliberation about the Form of Compensation and Compensation form Announcement (30 Days)	October – November 2022
8.	Objection and Court settlement (if any 88 days)	October 2022
9.	Compensation (if there is no objection) (30 days)	November - December 2022
10.	Handover (transfer of rights and certification)	December 2022
IV	MONITORING AND REPORTING	
1.	Internal Monitoring	November 2022
2.	External Monitoring	March 2023

Source: Draft LARAP, February 2022

6.7 Cost and Budget

Table 6.7-1 shows the estimated cost for the LARAP implementation.

DGH takes responsibility for securing financial sources as the project initiator. For the compensation cost, it has been planned that BPJT will prepare through the contract with the PPP investor.

The financial source of the livelihood restoration program and external monitoring is being requested by DGH to be included in the loan.

Table 6.7-1 Estimated Cost of LARAP Implementation

NO.	DESCRIPTION	TOTAL (IDR)
A	INDICATIONS OF PHYSICAL VALUE COMPENSATION	1,221,619,396,235
	Total Compensation for Affected Land	1,101,461,117,949
	Total Compensation for Affected Buildings	113,858,797,886
	Total Compensation for Affected Plants	6,297,480,400
	Total Compensation for Other Objects Related to Affected Land	2.000.000
B	INDICATIONS OF NON PHYSICAL COMPENSATION VALUE	301.462.996.351
	Loss of Business/Job/Business Opportunity	26.083.768.968
	Solatium Cost	43.983.935.407
	Relocation / Moving Cost	232.100.000
	BPHTB Cost (Rp)	59.468.991.487
	PPAT Cost	12.501.467.051
	Waiting Period Compensation Cost	58.048.855.301
	Land Remaining Loss Cost	7.667.336.123
	Other Physical Loss Cost	99.800.000
	Depreciation Cost	82.572.203.480
	Cost of Compensation for Loss of Tenant's Income	1.321.313.534
	Cost of Compensation for Loss of Worker's Income	9.483.225.000
C	OPERATING AND CERTIFICATE COSTS	7,875,430,409
1)	Affected Land Certification Cost	5,168,435,480
	Certificate Making Cost	5,168,435,480
2)	Residual Land Certification Cost	2,706,994,928
	Cost of Residual Land Measurement	942,407,758
	Cost of Examining Residual Land	1,231,387,170
	First Land Registration Cost for Remaining Land	80,450,000
	TKA Cost for Residual Land	452,750,000
D	TOTAL COST ESTIMATION OF COMPENSATION	1,530,957,822,995
E	ESTIMATION OF LIVELIHOOD RESTORATION PROGRAM (LRP) COST INCLUDING GENDER CONSIDERATION	26,339,934,648
F	ESTIMATION OF EXTERNAL MONITORING COST	7,901,980,394
G	TOTAL COST ESTIMATION	1,565,199,738,037

Source: Draft LARAP, February 2022

6.8 Monitoring

DGH takes full responsibility for conducting regular monitoring of the LARAP implementation. The key parameters of the monitoring are as follows.

- (i) Compensation payment.
- (ii) The land acquisition should be completed before the awarding of civil work contract.
- (iii) Stipulation on Livelihood Restoration Program (LRP).
- (iv) Eligibility on the project benefits.
- (v) The number of entitled parties and areas included in voluntary land donations.
- (vi) Public consultation and awareness on the compensation policy.

- (vii) Entitled parties should be monitored in connection with their recovery of productive activities.
- (viii) The level of satisfaction of entitled party on various aspects of LARAP. The implementation of complaint handling mechanism, and the speed of such complaint handling will be monitored.
- (ix) Throughout the implementation process, the tendency of living standards will be observed and surveyed. Any potential problems that may arise in the living standard recovery program will be reported.

In addition to the internal monitoring by DGH, external monitoring shall be conducted by an entrusted independent agency. Following monitoring indicators are to be considered for both internal and external monitoring:

- (i) The number of entitled parties based on the category of impact and the status of compensation payment.
- (ii) LRP for each category.
- (iii) The amount of funds allocated for operation or compensation and disbursed for each category.
- (iv) The final results of the complaint handling and unresolved issues which require action from the executing agency of the project.
- (v) Implementation problems and solutions.

6.9 Consultations

6.9.1 Overview

The consultation meetings held for the LARAP are listed in Table 6.9.1-1. The meeting held in August 2021 was to coordinate with the heads of local governments by sharing the project information and survey plan for preparing the LARAP. After identifying the affected landowners, the first stage of meetings with affected people were held for landowners from October to December 2021 followed by those for tenants and workers from December 2021 to January 2022. Those meetings were to share the project information and ask people's cooperation with the LARAP survey. After tabulating the survey results and preparing the draft LARAP report, the second stage of the consultations was implemented to explain the contents of the LARAP including survey results and compensation policies to all affected people from February to March 2022.

Table 6.9.1-1 List of Consultation Meetings for LARAP

Category	Target people	Date	Location	Purpose
Coordination meeting	Heads of affected sub-districts and villages	August 27, 2021	Tambakdahan subdistrict hall	Sharing the project information and survey plan.
1 st stage with affected people	Affected landowners	October 21 – December 27, 2021	At each village	Sharing the project information and conducting survey
	Affected tenants and workers	December 29, 2021- January 11, 2022	At each village	
2 nd stage	All types of affected	February 22 –	At each village	Sharing survey

with affected people	people (landowners, tenants, and workers)	6 March, 2022.		results and explaining compensation policies based on the draft LARAP
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Source: Draft LARAP, February 2022

6.9.2 1st Stage Consultation with Affected People

The 1st stage of the consultation meetings was held at village offices for affected landowners from October 19 to December 27, and for tenants and workers from December 29, 2021 to January 11, 2022. The purpose of the meetings was to provide information of the project including procedure of land acquisition as well as to collect census and socio-economic data of the households through filling the questionnaire forms. In the meetings with the landowners, the cut-off date was announced to be the date of the meetings and stated in the meeting minutes signed by village representatives.

In the question and answer sessions, the participants showed their intentions to support the Project. Many landowners told their hope that the land acquisition would be carried out at a reasonable price. Tenants and workers showed their interests in the livelihood restoration program for supporting their livelihood recovery.

Table 6.9.2-1 Dates and Number of Participants of the 1st Stage Consultation

Sub-district	Village	Landowners			Tenant and Workers		
		Date	Number of Participants		Date	Number of Participants	
			Male	Female		Male	Female
Cipeundeuy	Sawangan	25 – 27 December 2021	156	67	11 January 2022	43	3
	Kosar	18 November 2021	24	12			
Pabuaran	Karanghegar	21 October 2021	53	11	11 January 2022	55	8
Purwadadi	Panyingkiran	9 November 2021	35	13	7 January 2022	69	11
	Rancamahi	11 November 2021	10	7	7 January 2022	14	4
	Pasirbungur	10 November 2021	33	21	8 January 2022	60	7
Patokbeusi	Rancabango	11 November 2021	17	3	8 January 2022	17	3
Cikaum	Pasirmuncang	15 November 2021	18	7	10 January 2022	30	8
	Mekarsari	12 November 2021	43	21	5 January 2022	69	1
		13 November 2021	35	28			
Ciasem	Jatibaru	16 November 2021	39	16	6 January 2022	47	1
Tambakdahan	Tanjunggrasa	21 October 2021	35	7	5 January 2022	75	3
	Wanajaya	22 October 2021	20	9	6 January 2022	70	2
	Gardumukti	21 October 2021	7	12	4 January 2022	20	3
	Mariuk	20 October 2021	34	21	3 January 2022	79	6
	Kertajaya	19 October 2021	28	25	3 January 2022	77	29
Pamanukan	Bongas	29 October 2021	48	19	30 December 2021	66	8
	Rancasari						
	Rancabilir	31 October 2021	40	29	31 December 2021	71	3
Pusakajaya	Pusakajaya	1 November 2021	30	12	29 December 2021	74	14
Pusakanagara	Kotasari	2 November 2021	20	22			
		3 November 2021	43	21			
Sub total			768	383		936	114
Total			1,151			1,050	
						2,201	

Source: Draft LARAP, February 2022

6.9.3 2nd Stage Consultation with Affected People

The 2nd stage of the consultation meetings was held to disseminate the contents of the draft LARAP report to all of the affected people which covers all landowners, tenants and workers. It was held as small sessions separated into sixty groups of participants to comply with the regulation against pandemic. The dates of the meetings were from 22 February to 6 March, 2022.

Before the meetings, brochures which explain compensation policies for each type of impacts

and grievance handling mechanisms were distributed to the affected people as per JICA Guideline so that they could learn it before attending the meeting. During the meetings, the lists of the affected people's names and the maps of the areas were disclosed by posting on the walls so that the participants could confirm their own names and the areas.

The participants comments were mostly positive to the Project implementation and there were no strong objection to the land acquisition. Questions made for clarifying compensation policies and methodologies were answered by the LARAP experts.

Table 6.9.3-2 Dates and Number of Participants of the 2nd Stage Consultation

Sub-district	Village	Date	Number of Participants	
			Male	Female
Cipeundeuy	Sawangan	4 March 2022	48	59
		5 March 2022	61	44
		6 March 2022	64	26
	Kosar	4 March 2022	30	20
Pabuaran	Karanghegar	3 March 2022	124	20
Purwadadi	Panyingkiran	2 March 2022	52	26
		3 March 2022	50	42
	Rancamahi	1 March 2022	26	11
	Pasirbungur	2 March 2022	47	24
		3 March 2022	57	10
Patokbeusi	Rancabango	28 February 2022	37	13
Cikaum	Pasirmuncang	1 March 2022	54	13
		Mekarsari	28 February 2022	62
		1 March 2022	26	30
		2 March 2022	67	3
Ciasem	Jatibaru	25 February 2022	82	16
Tambakdahan	Tanjunggrasa	28 February 2022	86	16
		1 March 2022	88	3
	Wanjaya	26 February 2022	86	16
	Gardumukti	26 February 2022	33	7
	Mariuk	24 February 2022	38	13
		25 February 2022	92	1
	Kertajaya	22 February 2022	53	34
		23 February 2022	97	27
Pamanukan	Bongas	22 February 2022	52	36
	Rancasari	23 February 2022	62	18
	Ranchilir	24 February 2022	49	32
		25 February 2022	70	7
Pusakajaya	Pusakajaya	22 February 2022	72	26
Pusakanagara	Kotasari	23 February 2022	44	22
		24 February 2022	64	15
Sub total			1,873	679
Total			2,552	

Source: Draft LARAP, February 2022

6.10 Detailed Planning of Livelihood Restoration Program

6.10.1 Objectives of the Detailed Planning

Livelihood Restoration Program (LRP) was proposed to be implemented in the LARAP for the affected people as a form of trainings to maintain or improve the income and living conditions; however, the detailed contents of the program had not yet been planned. Considering that the land acquisition was going to be started soon, the detailed plan of the LRP was prepared by the Technical Assistance to ensure that the LRP would be implemented in a timely manner.

6.10.2 Planning Methodology

The detailed planning of LRP was implemented by collecting people's opinions through FGDs and coordinating with agencies through a workshop as follows.

(1) Focus Group Discussion

A series of Focus Group Discussions (FGDs) with the affected people were held at every affected village to collect the people's opinions and suggestions on LRP. It was held on 2-11 June, 2022 as detailed in Table 6.10.2-1. In total, 2,512 people participated in the FGDs out of the 2,570 who were identified as eligible for the LRP including landowners, tenants, and workers. Invitation was sent to each eligible person by a local consultant team entrusted as a part of this Technical Assistance.

During the FGDs, an online questionnaire form was requested to be filled by the participants to identify the program options in which they were willing to participate as well as the socio-economic conditions as the baseline. For those who could not attend the FGDs, the consultant team contacted individually to collect their answers.

Table 6.10.2-1 Dates and Number of Participants of FGDs for LRP

No	Village	Date	Number of Participants			Venue
			Male	Female	Total	
1	Kotasari and Pusakajaya	Thursday, 2 June 2022 Friday 3 June 2022 Saturday, 4 June 2022	173	64	237	Kotasari Village Hall
2	Bongas and Rancasari	Thursday, 2 June 2022 Friday, 3 June 2022	124	52	176	Bongas Village Hall
3	Rancahilir	Thursday, 2 June 2022 Friday 3 June 2022	127	34	161	Rancahilir Village Hall
4	Kertajaya	Thursday, 9 June 2022 Friday, 10 June 2022	145	72	217	Kertajaya Village Hall
5	Mariuk	Tuesday 7 June 2022 Wednesday, 8 June 2022	111	25	136	Civic center of Mariuk Village
6	Gardumukti	Monday 6 June 2022	23	15	38	Gardumukti Village Hall
7	Wanjaya	Sunday 5 June 2022 Monday 6 June 2022	78	19	97	Wanjaya Village Hall
8	Tanjunggrasa	Tuesday 7 June 2022 Wednesday, 8 June 2022	144	25	169	Tanjunggrasa Village Hall
9	Jatibaru	Sunday 5 June 2022	95	6	101	Jatibaru Village Hall
10	Mekarsari	Monday 6 June 2022 Tuesday 7 June 2022 Wednesday, 8 June 2022	157	79	236	Mekarsari Village Hall
11	Pasirmuncang	Saturday, 4 June 2022	53	16	69	Pasirmuncang Village Hall
12	Panyingkiran	Saturday, 4 June 2022 Sunday 5 June 2022	119	35	154	Panyingkiran Village Hall
13	Pasirbungur	Tuesday 7 June 2022 Wednesday, 8 June 2022	139	36	175	Pasirbungur Village Hall
14	Rancamahi	Monday 6 June 2022	28	10	38	Rancamahi Village Hall
15	Rancabango	Monday 6 June 2022	36	7	43	Rancabango Village Hall
16	Karanghegar	Saturday, 4 June 2022 Sunday 5 June 2022	131	37	168	Karanghegar Village Hall
17	Kosar	Thursday, 9 June 2022	29	19	48	Kosar Village Hall

No	Village	Date	Number of Participants			Venue
			Male	Female	Total	
18	Sawangan	Thursday, 9 June 2022 Friday, 10 June 2022 Saturday, 11 June 2022	157	92	249	Sawangan Village Hall
Total Participants			1869	643	2512	

(2) Workshop

Since the LRP needs to be implemented collaborating with local government agencies, a workshop was held by the consultant team to coordinate with those of Subang Regency on 16 June, 2022. Participated agencies are listed below. Those are agencies which have experiences for capacity development of local people.

- DGH of PUPR,
- Regional Development Planning, Research and Development Agency (BP4D), Subang Regency,
- Manpower and Transmigration Agency, Subang Regency,
- Agriculture Agency, Subang Regency,
- Livestock Agency, Subang Regency,
- Fishery Agency, Subang Regency,
- Cooperatives, Micro, Small & Medium Enterprises, Trade and Industry Agency (DKUPP), Subang Regency,
- Population Control, Family Planning, Women's Empowerment and Child Protection Agency (DP2KBP3A), Subang Regency, and
- Social Agency, Subang Regency.

6.10.3 Results of the Activities

(1) Focus Group Discussion

Before the FGDs, the consultant team discussed with agencies of Subang Regency and officials of each affected village as well as community leaders to identify needs of local capacity development, and listed 23 training options. The 23 training options were consulted with the affected people during the FGDs, and some of the participants proposed additional options to be considered. After the question and answer sessions, the participants were requested to fill a questionnaire form to select the program options in which they were willing to participate. The participants were allowed to chose their own proposal if they wanted. Table 6.10.3-1 shows the list of the program options proposed by the regency, villages, and the participants of FGDs.

Table 6.10.3-1 Initial List of Program Options

No	Name of Training	Information
1	Tilapia fish cultivation training	Jatibaru Village proposal
2	Catfish and hatchery Cultivation training	Suggestions from several villages
3	Carp farming and hatchery training	Rancamahi Village proposal
4	Freshwater lobster cultivation training	Sawangan Village proposal
5	Driving training	Suggestions from several villages
6	Floor mattress production skills training	Jatibaru Village proposal
7	Light vehicle/automotive engineering work skills training	Subang Regency Manpower and Transmigration Agency proposal
8	Handicraft training made from water hyacinth	Rancamahi Village proposal
9	Electric welding training	Subang Regency Manpower and Transmigration Agency proposal
10	Sewing skills training with garment qualification	Suggestions from several villages

No	Name of Training	Information
11	Rice-based food processing training	Suggestions from several villages
12	Cassava and banana chips processing training	Subang Regency DKUPP proposal
13	Plastic bag craft industry development training	Gardumukti Village proposal
14	Forklift operation training	Suggestions from several villages
15	Training in increasing agricultural production and handling rice pests	Suggestions from several villages
16	Training to increase agricultural production through horticultural crop cultivation	Suggestions from several villages
17	Training of rural women in productive economic enterprises	Subang Regency DPPBP3A Proposal
18	Agricultural training in a narrow field or yard	Suggestions from several villages
19	Salted egg production training	Wanajaya Village proposal
20	Beginner-level screen printing training	Subang Regency Manpower and Transmigration Agency proposal
21	GADA PRATAMA certificate security training	Suggestions from several villages
22	Oyster mushroom cultivation training	Suggestions from several villages
23	Oyster mushroom food processing training	Subang Regency DKUPP proposal
24	Sheep training and concentrate feed production	FGD participants proposal
25	Training of straw utilization and organic fertilizer manufacture	FGD participants proposal
26	Livestock training	FGD participants proposal
27	Barista training	FGD participants proposal
28	Chicken farming training	FGD participants proposal
29	Kawista fruit processing training.	FGD participants proposal
30	Computer training	FGD participants proposal
31	Foreign language training	FGD participants proposal

(2) Workshop

In the workshop, the results of FGDs were presented to share with the agencies, and a draft framework of LRP was explained to obtain support of the agencies for implementation. The agencies appreciated the LRP implementation for the Project and showed their intention to support the activities.

For finalizing the programs, it was confirmed that all program options including people's proposals should be adopted in the final plan as much as possible by combining with the other options. Also, it was discussed and concluded that the continuous support after the program was essential for successful outcomes. It was requested to each agencies to provide continuous support for each programs that would be planned and arranged by them. It was also decided that the agencies would prepare syllabus of training programs which were in their expertized fields, and provide them to the consultant team together with the cost estimation within a week after the workshop.

6.10.4 Planned Livelihood Restoration Program

The finalized LRP is summarized as follows.

(1) Objectives of Livelihood Restoration Program

The objective of the LRP is to restore the livelihood and income of the people whose livelihoods are affected by the Project. To improve the people's livelihood sustainably by enhancing the capabilities, the LRP is provided in a form of training for generating income.

The goals of the LRP are to maintain the people's livelihood at least equal to the condition before implementing the Project. In addition, the LRP also aims to contribute to empowerment of local human resource through inputting creative, innovative and entrepreneurial mindset so that the people could adapt to the social and economic changes in the future.

The objectives of the LRP are summarized as follows:

- 1) Restoring the livelihoods and income of affected people who will be affected by the Project due to land acquisition.
- 2) Contributing to improve human resource capabilities through the development of creative, innovative, and entrepreneurial mindsets.

(2) Target People

The target people of the LRP is the Project Affected Persons (PAPs) identified in the LARAP; namely, landowners, tenants, and workers (wedge earners) affected by the land acquisition for the Project. The number of the PAPs reported in the LARAP issued in May 2022 is 2,570 without family members based on the survey results conducted from October-December 2021 (Table 6.10.4-1).

Table 6.10.4-1 Number of Target People

Type of PAPs	Numbers
Land owners	1,359
Tenants	388
Workers	823
Total	2,570

Source: LARAP for Patimban Access Toll Road, May 2022

(3) Institutional Framework

The LRP is implemented by DGH as the Project executor collaborating with local government agencies which are capable of providing training and continuous support to the affected people. As the cost for implementing the LRP is expected to be covered by the yen loan for the Project, DGH will procure a consultant team with the yen loan and entrust the implementation to the team collaborating with the local government agencies.

The local government agencies include those of West Java Province, Subang Regency, and others which have suitable skills and experience for each training program. Figure 6.10.4-1 shows the institutional framework for implementing the LRP, and Table 6.10.4-2 summarizes the responsibility of each agency.

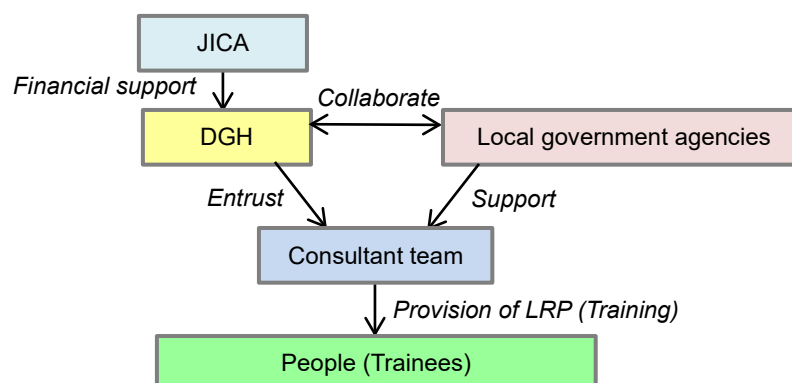


Figure 6.10.4-1 Institutional Framework of LRP

Table 6.10.4-2 Responsibilities of Agencies for Implementing LRP

Agency	Responsibility
DGH	To take overall responsibility for implementing LRP
Local government agencies	To cooperate and supervise the implementation of LRP
Consultant team	To implement LRP activities

(4) Training Programs

Table 6.10.4-3 shows the finalized training programs which was prepared by narrowing down through coordination with relevant agencies after the workshop and direct confirmation to the affected people by visiting their houses and contacting via phone. Considering the gender perspectives, five programs were prepared as those suitable for women.

Table 6.10.4-4 shows the details of each program. Some programs are accompanied by individual practices and business assistances depending on the program feature and the competence to be obtained. Individual practices mean practices led by trainers at trainees' own places separated into small groups. It aims to master the learned skills after they attended lectures and large group practices. Business assistances are supports by experts to ensure the trainees could use the skills as means of business for generating income.

Table 6.10.4-3 Finalized Training Programs

No	Name of Program	Number of Participants	Number of Batches	Agencies of Subang Regency for Cooperation
1	Automotive Light Vehicle Engineering Skills Training	291	9	Manpower and Transmigration Agency
2	Sewing Training with Garment Qualification (W)	263	8	Manpower and Transmigration Agency
3	Gada Pratama Certificate Security Training	210	7	Manpower and Transmigration Agency
4	Driving Training	198	6	Manpower and Transmigration Agency
5	Electric Welding Training	129	4	Manpower and Transmigration Agency
6	Forklift Operation Training	28	1	Manpower and Transmigration Agency
7	Rice-Based Food Processing Training (W)	142	5	DKUPP
8	Cassava and Banana Chips Training (W)	105	3	DKUPP
9	Plastic Bag Craft Industry Development Training (W)	24	1	DP2KBP3A
10	Women's Training in Rural Areas in Productive Economic Businesses (W)	138	4	DP2KBP3A
11	Training on Increasing Agricultural Production Through Horticultural Crop Cultivation	434	14	Agriculture Agency
12	Agricultural Production Improvement and Rice Pest Management Training	205	7	Agriculture Agency
13	Agricultural Training in Narrow Land or Yard	41	2	Agriculture Agency
14	Catfish Cultivation and Hatchery Training	50	2	Fishery Agency
15	Carp Cultivation and Hatchery Training	23	1	Fishery Agency

No	Name of Program	Number of Participants	Number of Batches	Agencies of Subang Regency for Cooperation
16	Tilapia Cultivation Training	47	2	Fishery Agency
17	Freshwater Lobster Cultivation Training	27	1	Fishery Agency
18	Sheep Farming Training and Concentrated Feed Making	125	5	Livestock Agency
Total		2,480	82	-
Person not willing to participate		90	-	-

Five programs with (W) are those suitable for women.

Table 6.10.4-4 Details of the Training Programs

No	Name of Program	Description	Implementation Period per Batch		
			Skill Training	Individual Practice	Business Assistance
1	Automotive Light Vehicle Engineering Skills Training	Maintenance skill training of light vehicles to be hired in workshops.	10 days	-	-
2	Sewing Training with Garment Qualification (W)	Sewing skill training to be hired in garment factories.	10 days	-	-
3	Gada Pratama Certificate Security Training	Training to be security guards.	6 days	-	-
4	Driving Training	Training of car driving to be hired for car terminal of the port.	6 days	-	-
5	Electric Welding Training	Welding skill training to be hired for construction works.	10 days	-	-
6	Forklift Operation Training	Forklift operation skill training to be hired for logistic works.	10 days	-	-
7	Rice-Based Food Processing Training (W)	Business training of producing and selling rice-based food.	3 days	2 weeks	1 month
8	Cassava and Banana Chips Training (W)	Business training of producing and selling cassava and banana chips.	3 days	2 weeks	1 month
9	Plastic Bag Craft Industry Development Training(W)	Skill training of making woven bags from plastic materials.	3 days	2 weeks	-
10	Women's Training in Rural Areas in Productive Economic Businesses (W)	Basic training to support women's economic activities including cake making, use of hijaber, and stress management.	6 days	-	-
11	Training on Increasing Agricultural Production Through Horticultural Crop Cultivation	Cultivation training of horticultural crops such as melon, eggplant, and flower.	9 days	2 weeks	1 month
12	Agricultural Production Improvement and Rice Pest Management Training	Pest control training for rice cultivation.	12 days	2 weeks	1 month
13	Agricultural Training in Narrow Land or Yard	Hydroponics and greenhouse cultivation training	4 days	2 weeks	1 month
14	Catfish Cultivation and Hatchery Training	Hatchery and nursery training for catfish cultivation.	3 days	2 weeks	1 month
15	Carp Cultivation and Hatchery Training	Hatchery and nursery training for carp cultivation.	3 days	2 weeks	1 month
16	Tilapia Cultivation Training	Hatchery and nursery training for tilapia cultivation.	3 days	2 weeks	1 month
17	Freshwater Lobster Cultivation Training	Training of breeding techniques for freshwater lobster cultivation	3 days	2 weeks	1 month

No	Name of Program	Description	Implementation Period per Batch		
			Skill Training	Individual Practice	Business Assistance
18	Sheep Farming Training and Concentrated Feed Making	Training of sheep farming technics	2 days	2 weeks	1 month

(5) Implementation and Monitoring Schedule

The LRP is implemented in two years. In parallel with the implementation of the LRP, livelihood conditions of the affected people are to be monitored until two years after the program is completed. Since some of the affected people need to relocate their houses, it is necessary to monitor the house relocation together with the livelihood conditions.

Table 6.10.4-5 presents the schedule of LRP implementation and the monitoring. The monitoring of livelihood conditions such as income and means of livelihood is to be conducted annually for sampled households which cover at least 30% of the entire affected households. The monitoring of relocation to record the relocated places shall be implemented in a quarterly basis for two years and annual basis after that targeting for all households whose houses need to be relocated for the Project.

Table 6.10.4-5 Schedule of the LRP and Monitoring

Items	Activities	Year																																															
		1												2												3												4											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
LRP implementation		[Gantt bars for LRP implementation]																																															
Monitoring of relocation and livelihood condition	Inception report	[Timeline with triangle at start]																																															
	Monitoring activity for relocation	[Timeline with bars]																																															
	Monitoring activity for livelihood condition	[Timeline with bars]																																															
	Monitoring report of relocation	[Timeline with triangles]																																															
	Monitoring report of relocation & livelihood condition	[Timeline with triangles]																																															
	Final report	[Timeline with triangle at end]																																															
Discussion of the monitoring results		[Timeline with circles]																																															

(6) Cost Estimation

The cost of the LRP implementation including monitoring was estimated and summarized in Table 6.10.4-6 and Table 6.10.4-7.

Table 6.10.4-6 Cost Estimation of LRP Trainings

No.	Name of Training	Number of Participants (Persons)	Number of Batch	Amount (IDR)
1	Automotive Light Vehicle Engineering Skills Training	291	9	1,205,265,500
2	Sewing Training with Garment Qualification	263	8	1,497,831,500
3	Gada Pratama Certificate Security Training	210	7	1,238,447,000
4	Driving Training	198	6	971,688,000
5	Electric Welding Training	129	4	1,978,128,760
6	Forklift Operation Training	28	1	312,424,300
7	Rice-Based Food Processing Training	142	5	685,221,425
8	Cassava and Banana Chips Processing Training	105	3	448,574,225
9	Plastic Bag Craft Industry Development Training	24	1	68,343,400
10	Women's Training in Rural Areas in Productive Economic Enterprises	138	4	892,265,760
11	Training on Increasing Agricultural Production through Horticultural Crop Cultivation	434	14	2,512,785,000
12	Agricultural Production Improvement and Rice Pest Management Training	205	7	1,752,443,500
13	Agricultural Training in Narrow Land or Yard	41	2	211,052,300
14	Catfish Cultivation and Hatchery Training	50	2	224,445,300
15	Carp Cultivation and Hatchery Training	23	1	171,398,500
16	Tilapia Cultivation Training	47	2	320,477,500
17	Freshwater Lobster Cultivation Training	27	1	204,933,500
18	Sheep Farming and Concentrated Feed Making	125	5	393,147,500
	Individual Practice	-	-	2,546,664,100
	Opening & Socialization	-	-	402,086,000
	Discussion of the Monitoring Report	-	-	366,776,320
	Total	2480	82	18,404,399,390

Table 6.10.4-7 Cost Estimation of LRP Operation and Ground Total

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (IDR)	AMOUNT (IDR)
A.	REMUNERATION				
I	PROFESSIONAL STAFF				
1	Social Expert/Team Leader	Person/Month	1 x 31.00	23,986,850.00	743,592,350.00
2	Agriculture Expert	Person/Month	1 x 21.00	21,519,400.00	451,907,400.00
3	Livestock Expert	Person/Month	1 x 5.00	21,519,400.00	107,597,000.00
4	Fishery Expert	Person/Month	1 x 6.00	21,519,400.00	129,116,400.00
5	Marketing & Packaging Expert	Person/Month	1 x 8.00	21,519,400.00	172,155,200.00
6	Entrepreneur Expert	Person/Month	1 x 8.00	21,519,400.00	172,155,200.00
7	Financial Expert	Person/Month	1 x 8.00	21,519,400.00	172,155,200.00
8	Gender Expert	Person/Month	1 x 18.00	21,519,400.00	387,349,200.00
SUB TOTAL PROFESSIONAL STAFF			105.00 Person/Month		2,336,027,950.00
II	SUB PROFESSIONAL STAFF				
1	Assistant Social Expert	Person/Month	31.00	11,285,550.00	349,852,050.00
2	Facilitator	Person/Month	210.00	9,424,850.00	1,979,218,500.00
3	Field Surveyor	Person/Month	115.00	8,999,000.00	1,023,385,000.00
SUB TOTAL SUB PROFESSIONAL STAFF			356.00 Person/Month		3,352,455,550.00
III	SUPPORTING STAFF				
	LRP Team				
1	Office Manager	Person/Month	1 x 31.00	8,575,400.00	265,837,400.00
2	Administrative and Financial Staff	Person/Month	2 x 24.00	8,575,400.00	411,619,200.00
3	Bilingual Secretary	Person/Month	1 x 24.00	9,343,950.00	224,254,800.00
4	Vulnerable Companion	Person/Month	1 x 12.00	9,424,850.00	113,098,200.00
5	Driver	Person/Month	2 x 24.00	4,206,800.00	201,926,400.00
6	Office Boy	Person/Month	1 x 24.00	3,600,050.00	86,401,200.00
	Monitoring				
1	Administrative and Financial Staff	Person/Month	2 x 25.00	8,575,400.00	428,770,000.00
2	Bilingual Secretary	Person/Month	1 x 15.00	9,343,950.00	140,159,250.00
3	Office Boy	Person/Month	1 x 25.00	3,600,050.00	90,001,250.00
4	Driver	Person/Month	1 x 7.00	4,206,800.00	29,447,600.00
SUB TOTAL SUPPORTING STAFF			284.00 Person/Month		1,991,515,300.00
SUB TOTAL REMUNERATION (A)			745.00 Person/Month		7,679,998,800.00
B.	REIMBURSABLE				
I	TRAVEL COST AND ALLOWANCE				55,490,000.00
II	OFFICE RENT/OFFICE RUNNING/OFFICE CONSUMABLE				999,480,000.00
III	EQUIPMENT, INSTRUMENTS, MATERIALS, SUPPLIES, ETC				831,876,000.00
IV	ACCOMMODATION				638,400,000.00
V	VEHICLE				1,049,334,500.00
VI	COVID-19 PREVENTION COST				65,900,000.00
VII	MEETING COST				19,800,000.00
SUB TOTAL REIMBURSEABLE (B)					3,660,280,500.00
C.	MISCELLANEOUS				
I	OFFICE EQUIPMENT				692,983,750.00
II	COMMUNICATION COST				100,750,000.00
III	REPRODUCTION OF REPORT				61,750,000.00
SUB TOTAL MISCELLANEOUS (C)					855,483,750.00
TOTAL = (A) + (B) + (C)					12,195,763,050.00
TRAINING PROGRAM					18,404,399,390.00
GROUND TOTAL					30,600,162,440.00
ROUNDED					30,600,162,000.00

6.11 External Monitoring Plan

Since the external monitoring plan has not yet been specified in the LARAP, it was proposed as follows by the Technical Assistance.

6.11.1 Objectives of External Monitoring

Objectives of the external monitoring are listed below.

- 1) To examine appropriate implementation of LARAP (land acquisition and resettlement process) including LRP in conformity with Indonesian laws and JICA Guidelines,
- 2) To verify the internal monitoring results conducted by DGH, and
- 3) To advise DGH to improve the implementation of LARAP including LRP as well as to solve any social issues associated with the Project.

6.11.2 Target of External Monitoring

Targets of the external monitoring are listed below:

- Activities related to land acquisition and resettlement including compensation payment,
- LRP activities and the results,
- Internal monitoring activities related to land acquisition, resettlement, and LRP,
- Other social issues associated with the Project.

The Project Affected Persons (PAPs) to be considered in this external monitoring are those identified in the LARAP including the PPP project area; namely, landowners, tenants, and workers (wedge earners) affected by the land acquisition for the Project. The number of the PAPs reported in the LARAP issued in May 2022 is 2,570 without family members based on the survey results conducted from October-December 2021. The target people in this external monitoring shall be primarily, but not limited to, the PAPs, and shall also cover those who may be indirectly affected by collecting information through consultation meetings and FGDs.

6.11.3 Methodology

The external monitoring is to be conducted by an independent External Monitoring Agency (EMA), which is a party with no existing contracts with DGH and/or contractors of DGH related to this Project. The scope of the EMA are listed as follows.

- 1) Monitor the implementation of LARAP and LRP.
- 2) Observe and review LARAP and LRP plan to develop specific monitoring indicators for undertaking monitoring of the implementation of LARAP and LRP.
- 3) Review and verify the progress of the implementation of LARAP and LRP using developed indicators.
- 4) Review the list of the Project Affected Persons (PAPs) in LARAP and assess the adequacy of provision of compensation/assistance including LRP.
- 5) Review the internal monitoring reports and assess the adequacy by conducting primary data collection such as conducting interviews to PAPs randomly and related agencies. Internal monitoring reports include land acquisition and resettlement progress report, LRP implementation report, livelihood monitoring report, and any other reports prepared internally associated with the Project.
- 6) Hold consultation meetings and/or Focus Group Discussions (FGDs) with the people in the surrounding area of the project site to identify any social issues associated with the Project.
- 7) Develop reports to summarize monitoring results and propose measures to improve the implementation LARAP and LRP as well as to solve social problems.
- 8) Hold workshops with DGH and related agencies to share the monitoring and evaluation results.

6.11.4 Schedule

Table 6.11.4-1 shows the schedule of the external monitoring.

The external monitoring is to be initiated after the LRP and internal monitoring are started, and to be

continued up to five months after the completion of the monitoring. During the period, primary data collection including interview to sampled PAPs and holding consultations/FGDs shall be implemented once a year.

Table 6.11.4-1 Schedule of External Monitoring

Items	Activities	Year	1					2					3					4																															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45		
LRP implementation			[Shaded area]																																														
Internal monitoring			[Shaded area]																																														
External Monitoring	Inception report		△																																														
	Reviewing internal monitoring reports		[Shaded area]																								[Shaded area]					[Shaded area]																	
	Primary data collection including consultations/FGDs and data tabulation		[Shaded area]					[Shaded area]					[Shaded area]					[Shaded area]																															
	Survey report		△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
	Annual evaluation report													△																																			
	Final evaluation report																																													△			
	Workshop												○															○																					○

6.11.5 Cost

The cost of the external monitoring activities are summarized in Table 6.11.5-1.

Table 6.11.5-1 Cost Estimation of External Monitoring

NO	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (IDR)	AMOUNT (IDR)
A	REMUNERATION				
I	PROFESSIONAL STAFF				
1	Team Leader/Social Expert	Person/Month	1 x 25	23,986,850.00	599,671,250.00
2	Social Economic and Culture Expert	Person/Month	1 x 17	21,519,400.00	365,829,800.00
3	Legal Expert	Person/Month	1 x 17	21,519,400.00	365,829,800.00
SUB TOTAL PROFESSIONAL STAFF			59	Person/Month	1,331,330,850.00
II	SUPPORTING STAFF				
1	Field surveyer	Person/Month	4 x 12	8,899,000.00	427,152,000.00
2	Administration and Finance Staff	Person/Month	1 x 25	8,575,400.00	214,385,000.00
3	Bilingual Secretary	Person/Month	1 x 17	9,343,950.00	158,847,150.00
4	Driver	Person/Month	1 x 25	4,206,800.00	105,170,000.00
5	Office Boy	Person/Month	1 x 25	3,600,050.00	90,001,250.00
SUB TOTAL SUPPORTING STAFF			140	Person/Month	995,555,400.00
SUB TOTAL REMUNERATION (A)			199	Person/Month	2,326,886,250.00
B	REIMBURSABLE				
I	OFFICE RENT/OFFICE RUNNING/OFFICE				750,750,000.00
II	EQUIPMENT, INSTRUMENTS, MATERIALS, SUPPLIES,				313,989,750.00
III	ACOMMODATION				354,000,000.00
IV	VEHICLE				362,072,250.00
SUB TOTAL REIMBURSEABLE (B)					1,780,812,000.00
C	MISCELLANEOUS				
I	OFFICE EQUIPMENT				390,133,750.00
II	COMMUNICATION COST				81,250,000.00
III	REPRODUCTION OF REPORT				57,500,000.00
SUB TOTAL MISCELLANEOUS (C)					528,883,750.00
D	WORKSHOP & CONSULTATIONS				
I	WORKSHOP				366,776,320.00
II	CONSULTATIONS/FGDs				2,732,888,000.00
SUB TOTAL WORKSHOP & CONSULTATIONS (D)					3,099,664,320.00
TOTAL = (A) + (B) + (C) + (D)					7,736,246,320.00
ROUNDED					7,736,246,000.00

Chapter 7. Surveys and Planning from Gender Perspectives

JICA promotes “gender mainstreaming” which clarifies development challenges, needs and impact from gender perspectives at every stage of project formation, implementation, monitoring and evaluation phases. In order to support the executing agency to address gender perspectives in the Project, necessary surveys and planning are proposed.

7.1 Identification of Points/Issues for Gender Mainstreaming in the Project

“Guidelines for Promoting Gender Mainstreaming in JICA Projects”¹⁸ (hereinafter referred as “Guidelines for Gender”) lists likely gender perspectives which can be incorporated in projects in the field of transportation in the following categories of points/issues: (i) transport infrastructure development and service provision, (ii) construction works, (iii) institutional capacity development of relevant organizations, and (iv) environmental and social considerations. Along with the points/issues, the necessary perspectives to be addressed in the Project was selected as shown in the Table 7.1-1. Out of the four, (ii) construction works, (iii) institutional capacity development of relevant organizations, and (iv) environmental and social considerations were selected to be addressed in the Project.

Table 7.1-1 Gender Perspectives to be Addressed in the Project

Points/issues of gender perspectives In Guidelines for Gender	Necessity of consideration for the Project
<p>(i) Transport infrastructure development and service provision: This category focuses on gender differences in the use of transportation infrastructure; for example, differences of travel pattern between men and women, accessibilities to measures of transportation, social and cultural restrictions, and differences in terms of safety by gender.</p>	Less necessary because the toll road developed by the Project is not for public use but for the port related traffic.
<p>(ii) Construction works: In general, men are more likely to participate as unskilled labor. Women sometimes cannot participate in construction works due to lack of facilities such as female toilets and changing rooms. Furthermore, women may face discrimination in terms of employment or wages, even if they engage in the same tasks as men.</p>	Less necessary because equal job opportunity to women is stipulated in recruiting policy for construction and operation phase.
<p>(iii) Institutional capacity development of relevant organizations: Employment in the field of transportation is male dominated as it is in other fields of infrastructure. Needs of women in the field of transportation are not acknowledged as staff of relevant organizations lack sufficient understanding of gender issues.</p>	Less necessary because gender equality is considered based on gender consideration policy.
<p>(iv) Environmental and social considerations Projects may have different impacts on men and women in terms of resettlement, sexually transmitted diseases, and economic activities.</p>	Necessary. The Project will impact socially due to land acquisition and construction activities. It is required attention to women headed households and women livelihood loss.

¹⁸ Guidelines for Promoting Gender Mainstreaming in JICA Projects [Transportation], September 2016

7.2 Current Status for Addressing Gender Perspectives in the Project

For each of the selected three categories of points/issues, current status for addressing gender perspectives in the Project is described as follows.

(1) Construction works

Based on the local information, it is not so common for women to participate in physical labor work in construction. However, women in the project area are not under the control of men and are able to work outside of households. It is necessary not to limit the job opportunities to men for construction employment and need to open to women as well to secure gender equality.

This point of view has already been addressed in the EIA. It has been mentioned in the Environmental Management Plan (RKL) that job opportunities for construction needs to be provided equally to women. Recruitment process will be logged, and employment data will be reported to the authority.

(2) Institutional capacity development of relevant organizations

In DGH, the majority of the staffs are male although female staffs also seem common. DGH complies with Presidential Instruction No.9/2000 on Gender Mainstreaming in National Development. DGH considers gender equality on recruiting, working environment and promoting policy in accordance with the law.

While gender equality among the DGH staff is not necessarily directly related to the Project itself, gender perspectives associated with the project impacts such as consideration of women's livelihood affected by the construction and land acquisition need to be highlighted and understood sufficiently by the staff. LARAP and LRP program included gender study and its consideration have been reviewed and understood by DGH and their implementing staffs.

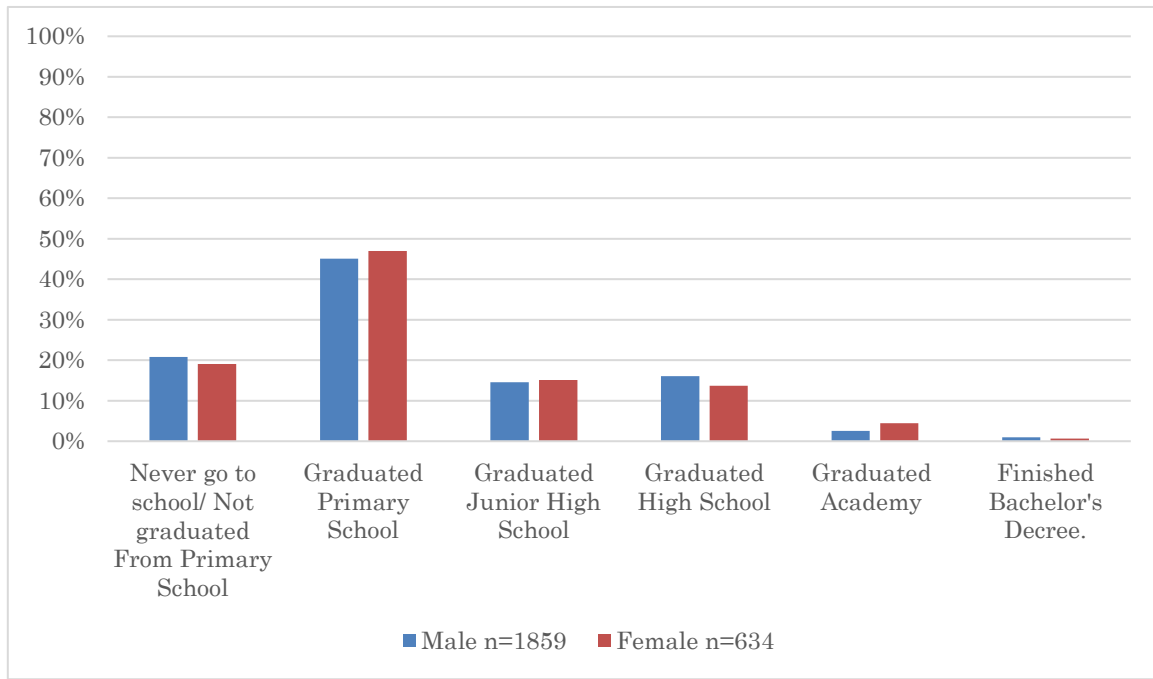
(3) Environmental and social considerations

The survey results for LARAP showed that 25% of the persons affected by the land acquisition were women; particularly, 39% among landowners was women. To understand the feature of the affected women's lifestyle, the results of the socio-economic survey for LARAP were analyzed by gender and presented in Figure 7.2-1, 2, and 3; however, no significant differences between men and women could be found. More than 45% of each men and women population have finished primary school (Figure 7.2-1). Majority of men and women are both working in agricultural industry (Figure 7.2-2). In addition, most of men and women income level is mostly in IDR 2,000,000-4,000,000 (Figure 7.2-3).

Meanwhile, the results of the interview survey for EIA indicated that most of the women in Subang Regency were working for household-related works and lower ratio of population was working outside. Although the present socio-economic conditions of the affected women were not different from those of the men, many affected women have low educated level, work in farm related jobs, and earn IDR 2,000,000-4,000,000 monthly, which indicated the women might not be resilient when the existing livelihood means were lost. As most of acquired lands are farm land, it is necessary to provide suitable job opportunities for women together with trainings to improve the skill in order to recover the livelihood of the affected women.

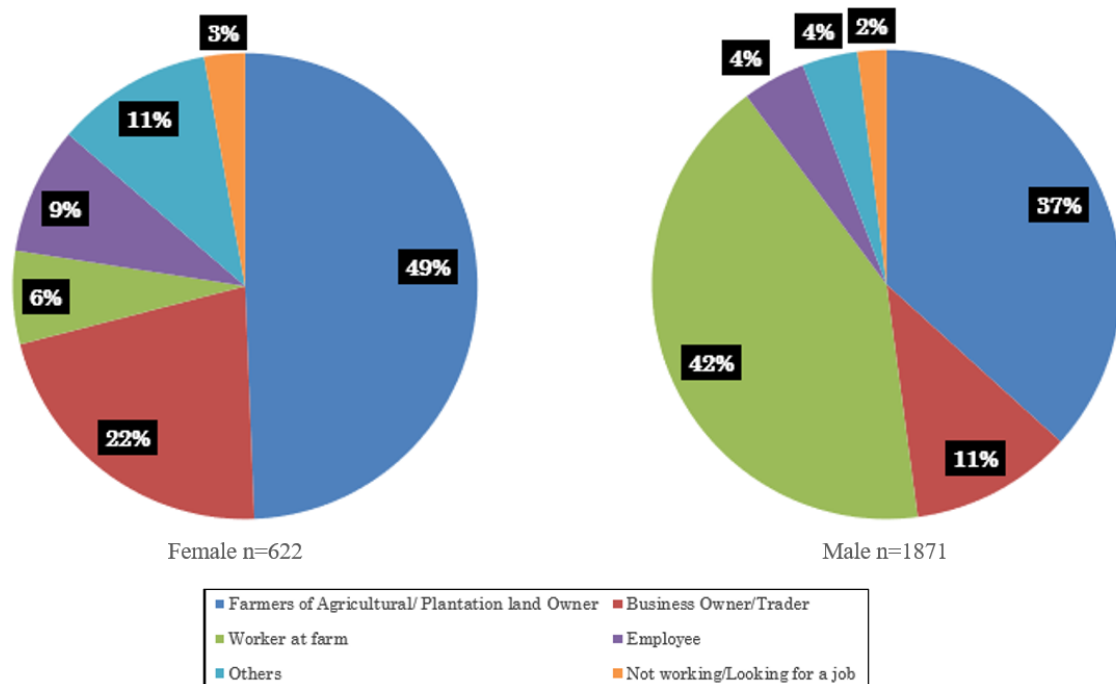
With regards to compensation for land acquisition and resettlement, payments are secured to women equally with men in conformity with laws and regulations. Although the actual payments need to be monitored for confirmation, gender issues in compensation payment does not seem to arise significantly.

Along with the labor inflow for construction activities, risks of sexually transmitted diseases represented by HIV/AIDS are concerned. RKL for the Project has already requested HIV/AIDS prevention measurement during the construction phase and it will be comprised with construction contract so that the risks would be minimized.



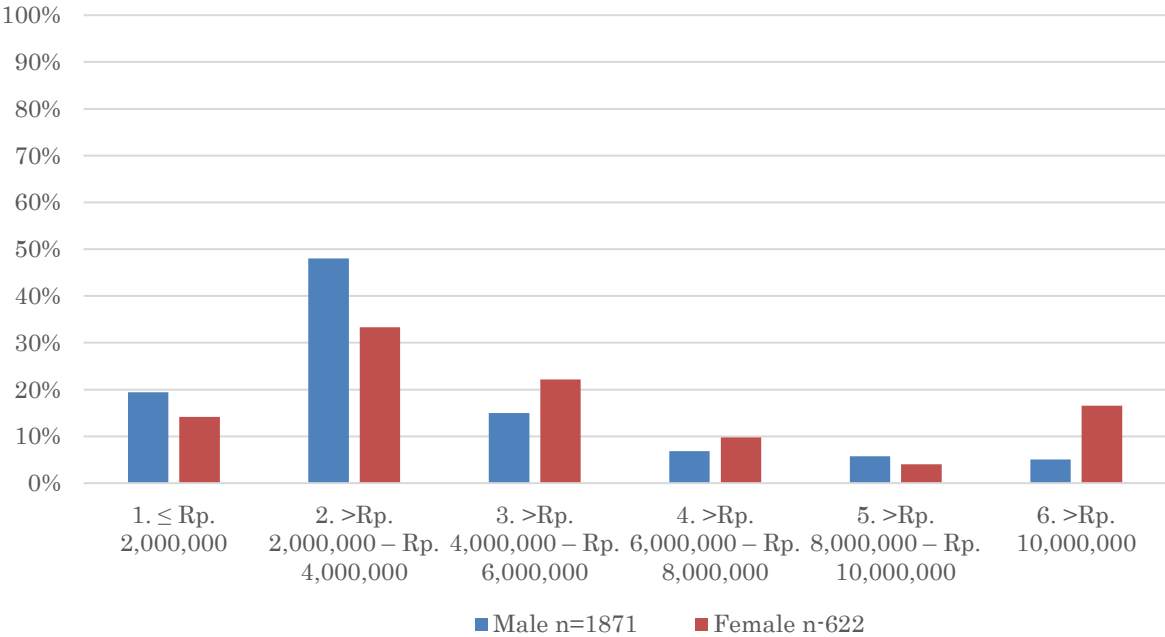
Source: LARAP survey in October 2021- January 2022

Figure 7.2-1 Education Level by Gender



Source: LARAP survey in October 2021- January 2022

Figure 7.2-2 Source of Income



Source: LARAP survey in October 2021- January 2022

Figure 7.2-3 Monthly Income Level of Affected People by Gender

7.3 Consideration on Gender Gap

Considering the status of some points for addressing gender perspectives described above, it was concluded that it is necessary to prepare a plan for recovering women’s livelihoods affected by the Project in a way of suitable for their lifestyle, present skill, and demands which may be different from those of men. To address those gaps, following steps has been taken to prepare livelihood restoration program.

(1) Identification of women’s socio-economic conditions

To identify the affected women’s living conditions, socio-economic survey has been conducted including data analysis by gender so that the difference brought by gender is able to be understood. The data suggested that the affected women’s economic recovery needed to be considered although significant economic gaps between men and women could not be identified.

(2) Elaborating a Livelihood Restoration Program (LRP) suitable for women

Through Focus Group Discussions (FDGs) with the affected people and consultations with local government agencies as well as community leaders, some training programs suitable for women were proposed and finalized as a part of LRP; those are 1) cassava and banana chips processing training, 2) rice raw food processing training, 3) sewing training with garment qualification, 4) plastic bag craft industry development training, and 5) women’s training in rural areas to be productive. These programs will be accompanied by a gender expert and/or implemented in collaboration with Women Empowerment and Child Protection Agency of Subang Regency.

For implementing the programs, it is necessary to closely monitor the women’s participation and the training outcomes, and to provide any additional support as needed.

Chapter 8. Climate Change

Referring to JICA Climate - FIT (Adaptation), climate change risk of the Project was evaluated and considered its adaptation option was considered.

8.1 Current and Future Trend on Climate and Disasters

(1) Temperature and Rainfall

Current and future trends of temperature and rainfall in Indonesia are shown as below. Please see 2.3.2 *Natural Condition* for more detailed current trend.

Table 8.1-1 Spatial Variation of Temperature and Rainfall

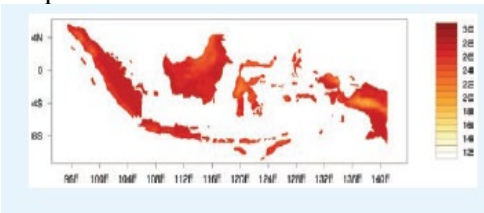
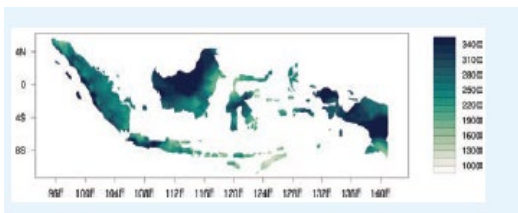
Temperature	Rainfall
Spatial Variation	
<p>Figure 8.1-1 Spatial Variation on Temperature</p>  <p>Source: climate risk country profile Indonesia (2021)¹⁹</p>	<p>Figure 8.1-2 Spatial Variation on Rainfall</p>  <p>Source: climate risk country profile Indonesia (2021)</p>

Table 8.1-2 Future Trends on Temperature and Rainfall

Temperature	Rainfall
<p>- For Indonesia, the Coupled Model Intercomparison Project Phase 5²⁰ (CMIP5) models show a <u>consistent warming trend for all emissions scenarios</u>.</p>	<p>- The projections in rainfall are less certain and vary by both Representative Concentration Pathways (RCPs)²¹ scenarios as well as models</p> <p>- Projected precipitation trends show a trend of increase in rainfall for western and southern areas and a reduction in rainfall for the southern islands; an <u>increase in intensity for extreme rainfall events</u>.</p>
<p>CMIP5 ensemble projected change (32 GCMs) in annual temperature and precipitation by 2040–2059 (top) and by 2080–2090 (left) relative to 1986–2005 baseline under RCP8.5²²</p>	

¹⁹ Climate Risk Profile: Indonesia (2021): The World Bank Group and Asian Development Bank.

²⁰ <https://www.wcrp-climate.org/wgcm-cmip/wgcm-cmip5>

²¹ A database with scenarios from the integrated assessment community to expedite climate change assessments developed by the international scientific community to address the Intergovernmental Panel on Climate Change ask.

²² WBG Climate Change Knowledge Portal (CCKP 2021). Indonesia. Climate Data. Projections. URL: <https://climatedata.worldbank.org/CRMePortal/web/agriculture/crops-and-land-management?country=IDN&period=2080-2099>

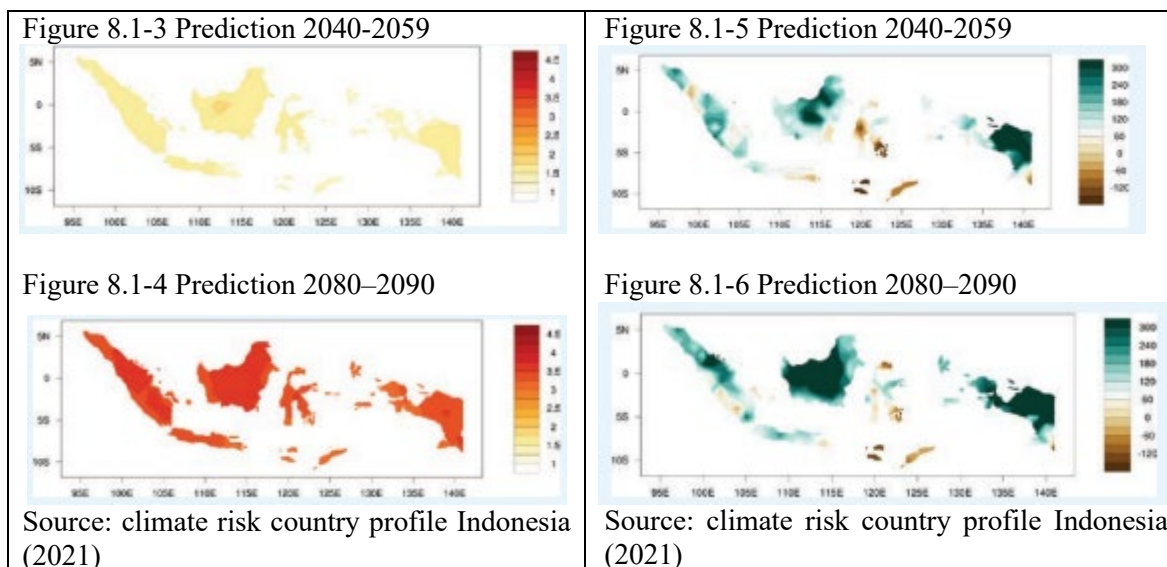


Table 8.1-3 Projected anomaly (changes °C) for maximum, minimum, and average daily temperatures in Indonesia for 2040–2059 and 2080–2099, from the reference period of 1986–2005 for all RCPs. The table is showing the median of the CCKP model ensemble and the 10th–90th percentiles in brackets²³

Scenario	Average Daily Maximum Temperature		Average Daily Minimum Temperature	
	2040–2059	2080–2099	2040–2059	2080–2099
RCP2.6	0.9 (0.2, 1.5)	0.9 (0.2, 1.8)	0.9 (0.4, 1.5)	0.9 (0.3, 1.6)
RCP4.5	1.2 (0.5, 2.0)	1.6 (0.8, 2.6)	1.2 (0.7, 1.8)	1.6 (1.0, 2.5)
RCP6.0	1.0 (0.3, 1.9)	2.0 (1.2, 3.0)	1.1 (0.6, 1.7)	2.0 (1.4, 2.9)
RCP8.5	1.6 (0.8, 2.5)	3.4 (2.4, 4.9)	1.6 (1.1, 2.3)	3.4 (2.6, 4.6)

Source: climate risk country profile Indonesia (2021)

(2) Flood Risk

According to g et al. (2015), flood risk and adaptation strategies in Indonesia is explored under increased climate change and urban expansion. They found high uncertainty around climate change impacts on increased river flood risk but estimated that climate change could amplify coastal flood risk by 19–37% by 2030 (measured by Expected Annual Damage).

(3) Sea level Rise

Indonesia’s NC3 describes how rising sea levels and strong wave action contribute to significant coastal erosion — a situation exacerbated by climate change.

Coastal areas are exposed to permanent inundation, high tides and land subsidence, affecting settlements, rice fields, ponds and harbors/airports.

(4) Cyclone

Known risks include the action of sea level rise to enhance the damage caused by cyclone-induced storm surges, and the possibility of increased windspeed and precipitation intensity.

²³ WBG Climate Change Knowledge Portal (CCKP, 2021). Indonesia Climate Data: Projection. URL: <https://climateknowledgeportal.worldbank.org/country/indonesia/climate-data-projections>

Indonesia is influenced by the movement of tropical cyclones in the south eastern Indian Ocean between January and April and the eastern Pacific between May and December, with the country usually impacted by strong winds and heavy rainfall (although the country is not directly in the path of cyclones since it is located on the Equator). Increased sea-surface temperatures associated with climate change are predicted to increase tropical cyclone.

(5) Drought

It is predicted that the annual probability of occurrence of severe drought by the 2090s roughly doubles from 4% to 9% under RCP2.6 and RCP8.5 emissions pathways, respectively.

At a national scale, there are a few studies on climate change impacts on water stress and drought in Indonesia. However, droughts are expected to increase in frequency and intensity given the association of accentuated drought with El Niño events, which are expected to increase in frequency and intensity through global warming.

8.2 Exposure and Hazard of this Project

(1) Hazard

According to JICA Climate - FIT (Adaptation), *Hazard* refers to climate-related physical events or trends or their physical impacts.

Applying this term to this Patimban Access Toll Road Project, hazard is assumed to be flood and sedimentation caused by flood and/or heavy rain to the road structures. On the other hand, hazards associated with sea is not expected because the Project is located 8km far from the sea and the Patimban port.

(2) Exposure

Exposure refers to “the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected” (IPCC AR5)²⁴. Exposure of this Project is assumed to be embankment, overpasses and bridges, drainages and irrigations and underpass.

8.3 Climate Change Risk and Adaptation Measures

8.3.1 Climate Risk Assessment

Climate risk of the Project is assessed with hazard and exposure as mentioned above. Climate risk is identified by following steps as JICA Climate-FIT (adaptation) suggested. The result of climate risk assessment on the Project is shown in climate risk matrix (figure 8.3-1).

- Each hazard current frequency and future trend is identified in 8.2 *Exposures and Hazard* based on current and future trend on climate and disasters.
- Exposures as identified in 8.2 Exposure and Hazard based on the Project components are potentially vulnerable to identified hazards.
- Degree of potential impacts is estimated based on existing exposures of similar roads in Subang Regency by past hazards in blue columns corresponding to each hazard and exposure.

²⁴ IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp

- Damages on roads in Subang Regency by two floods in 2014 and 2020 were examined.
- Each potential impact is assessed on the degree of impact with scores as: (3) the impact was too challenging to tackle; (2) the impact was challenging to tackle; (1) the impact was not challenging to tackle/the impact was small; (0) No impact was reported/lack of information.
- Most vulnerable exposure is identified in “E3 drainage and irrigation” with the degree of potential impact scored the most. Detailed vulnerability is shown in vulnerability column.
- Considering frequency and degree of impact on the exposure by the past hazard, climate risk on the Project is identified.

		Hazard		Vulnerability	Climate Risk
		H1 flood	H2 Sedimentation caused by rain		
	Current Frequency	+ (Occasionally occurring)	+ (Occasionally occurring)		
	Future Trend	↗ (increasing)	↗ (increasing)		
Exposure	E1 Embankment	(2) Embankment may collapse due to long-term flooding		In January 2014, increased water collapsed Cipunagara River dike. Irrigation and drainage channels were overflowed, and rice fields were flooded.	Clogging drainage and irrigation due to flooding may cause traffic disturbance.
	E2 Overpasses and Bridges	(0) Overpasses and bridges may break due to increase of water flow and erosion	(0) Overpasses and bridges may break due to stack by sedimentation and broken other infrastructures.		
	E3 Drainage and Irrigation	(2) Drainage and irrigation may collapse due to flood	(2) Drainage and irrigation may be clogged due to sedimentation		
	E4 Underpass	(0) Underpass may not be accessible due to flood	(0) Underpass may be clogged due to sedimentation		

Figure 8.3.1-1 Climate Risk Matrix

8.3.2 Potential Adaptation Option

On 8.3.1 Climate Risk Assessment, it was identified that drainage and irrigation is more vulnerable to hazards and potential climate risk is “clogging on drainage and irrigation channel” due to flooding may cause traffic disturbance.” To tackle these exposure and climate risk, potential adaptation option for this project is identified:

- Install drainage system with enough capacity and strong structure.
- Drainage maintenance and management (including sweeping clogs)

Completed climate risk matrix including potential adaptation option is shown as below.

		Hazard		Vulnerability	Climate Risk	Potential Adaptation Option
		H1 flood	H2 Sedimentation caused by rain			
Current Frequency	Future Trend	+ (Occasionally occurring)	+ (Occasionally occurring)			
		↗ (increasing)	↗ (increasing)			
Exposure	E1 Embankment	(2) Embankment may collapse due to long-term flooding		In January 2014, increased water collapsed Cipunagara River dike. Irrigation and drainage channels were overflowed, and rice fields were flooded.	Clogging on drainage and irrigation channels due to flooding may cause traffic disturbance.	Install strong drainage system Drainage maintenance and management (including sweeping clogs)
	E2 Overpasses and Bridges	(0) Overpasses and bridges may break due to increase of water flow and erosion	(0) Overpasses and bridges may break due to stack by sedimentation and broken other infrastructures.			
	E3 Drainage and Irrigation	(2) Drainage and irrigation may collapse due to flood	(2) Drainage and irrigation may be clogged due to sedimentation			
	E4 Underpass	(0) Underpass may not be accessible due to flood	(0) Underpass may be clogged due to sedimentation			

Figure 8.3.2-1 Completed Climate Risk Matrix

8.4 GHG Emission from Scope 1

JICA Guidelines also requires the Project to consider climate change as a part of environmental and social considerations. In addition to GHG emission reduction comparing with and without the new toll road (*refer ch. 5.5 Survey Result*), direct GHG emissions from the Project (the government project section with ODA loan), so called Scope1 of the Project, is calculated as below.

8.4.1 Definition of GHG emission from Scope 1

JICA Guidelines mentions that “for projects that are expected to generate more than a certain amount of greenhouse gas emissions, the total amount of greenhouse gas emissions will be estimated and disclosed before the project implementation” (JICA GL Appendix 1, 6. Climate Change). According to FAQ of JICA Guidelines, the certain amount of GHG means more than 25,000 tons of CO₂-equivalent emission annually for Scope 1 according to GHG protocol²⁵, which is direct GHG emissions from the project.

According to Japan Federation of Construction Contractors, Scope 1 of a construction project is the GHG from construction equipment by their fuels used in a construction area. Therefore, scope 1 of the Project is defined as GHG emission from construction equipment use due to their fuel. GHG emission from vehicles using the new road itself during operation period is not considered as scope 1. It is because traffic volume from Patimban port would be produced in despite of the existence of the toll road project.

8.4.2 Calculation

GHG emission of the Project (the government project section being financed by ODA loan) was calculated using scale of project components multiplied by appropriate carbon dioxide emission intensity in accordance with *Proposal for a CO₂ Emissions Estimation Method for Expressway Projects* (tentative translation) (December 2004) by Express Highway Research Foundation of Japan. Project component and carbon dioxide emission intensity is shown below.

Table 8.4.2-1 Project Component

Item	The government section with ODA loan
Junction & Interchange	2
Bridge	23
Barrer Gate/Toll Gate	1
Piled slab (km)	3.7650
Embankment (km)	17.910

Source: Draft Review of Feasibility Study Report, March 2022

²⁵ <https://ghgprotocol.org/>

Table 8.4.2-2 Carbon Dioxide Emission Intensity

Section	Carbon Dioxide Emission Intensity (t-CO ₂ /km)
Civil Engineering Section	2267.8
PC Bridge Section	1400.7
Copper Bridge Section	1287.0
Tunnel Section	713.5
Interchange	1615.2
Parking Area	2129.2

Source: Proposal for a CO₂ Emissions Estimation Method

8.4.3 GHG Emission Estimation Result

Scope 1 GHG emission of the Project was estimated as approximately 24,950 tons of CO₂-equivalent annually, which was below 25,000 tons.

Table 8.4.3-1 Annual CO₂ Emission Estimation of the government section with ODA loan

No.	Item	The government section Sta. 14+110 - 37+050
1	Junction & Interchange	3,230
2	Bridge	23
3	Barrer Gate/Toll Gate	749.8
4	Piled slab (km)	5,273.6355
5	Embankment (km)	40,616.298
Total CO ₂ Emission (t)		49,893.13
Annual CO ₂ Emission (t)		24,946.57

Appendix I Monitoring Form for Environment

Following monitoring form is proposed for environmental monitoring items to confirm environmental management plan is appropriately implemented.

Although EIA/AMDAL was prepared for entire section of 37km, the section to be financed by JICA will be between the point of 14.1 km to 37.05 km consisting of four construction packages. This format is for reporting the monitoring results of the environmental conditions in the four packages of the government section with ODA loan (JICA section). Distribution of the monitoring sites located in and outside of the JICA section is shown in below map.

Monitoring data will be collected by each construction contractor of the package and supervision consultant will compile them for JICA section in this format and report to DGH in construction phase. Monitoring data of PPP section will be reported using the same format through BPJT and DGH. In operation phase, environmental report is reported to the Environmental Agency by DGH through the project operator.

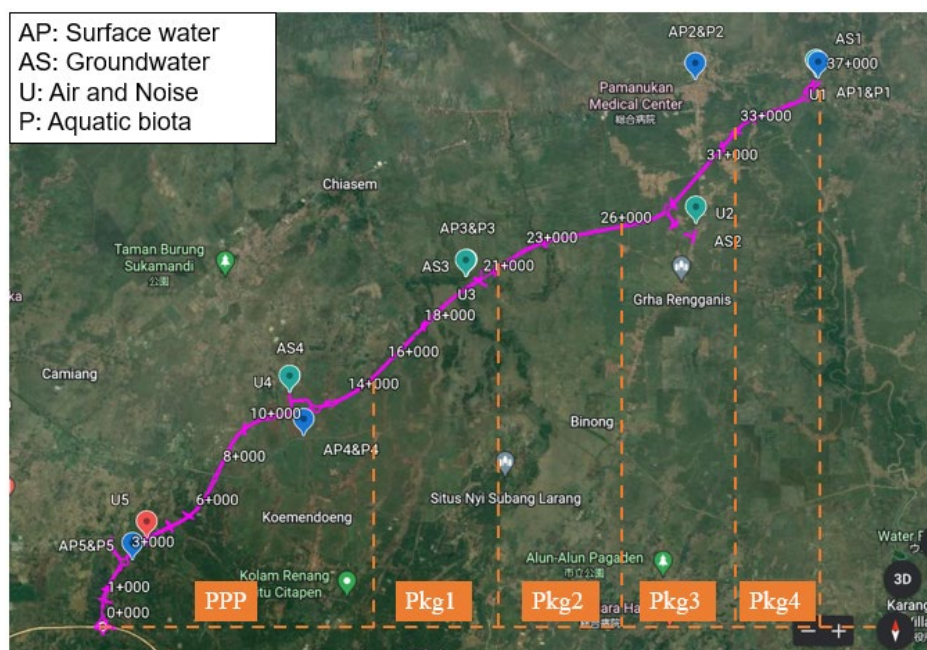


Figure 1 Map of Monitoring Sites

Table 1 Sampling Location

Parameter	Name	1	2	3	4	5
Surface Water	AP	S 06° 16'	S 06° 16'	S 06° 21'	S 06° 24'	S 06° 26'
Aquatic Biota	P	51,436" E 107° 51' 47,898"	53,254" E 107° 49' 12,464"	00,086" E 107° 44' 23,572"	19,881" E 107° 40' 57,347"	55,441" E 107° 37' 20,803"
Groundwater	AS	S 06° 16' 49,407" E 107° 51' 44,873"	S 06° 19' 53,492" E 107° 49' 13,271"	S 06° 21' 00,442" E 107° 44' 22,276"	S 06° 21' 00,442" E 107° 44' 22,276"	
Air and Noise	U	S 06° 16' 49,308" E 107° 51' 45,168"	S 06° 19' 53,497" E 107° 49' 13,276"	S 06° 21' 00,547" E 107° 44' 22,208"	06° 23' 25,685" E 107° 40' 39,870"	S 06° 26' 28,274" E 107° 37' 38,875"

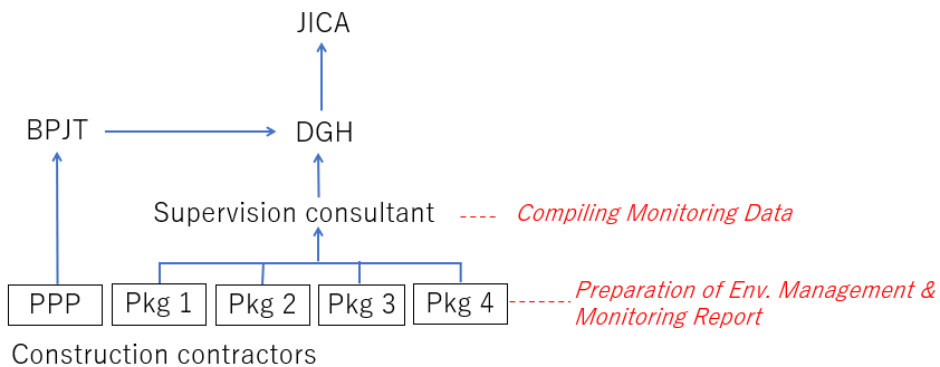


Figure 2 Monitoring Report Flowchart in Construction Phase

A. Whole Monitoring Period

1. General Information

Please fill in following table.

Report Date	dd/mm/yyyy
Monitoring Period.	From dd/mm/yyyy to dd/mm/yyyy
Project Progress	Package 1: <i>e.g. land acquisition, land prep., construction, in operation</i>
	Package 2:
	Package 3:
	Package 4:

2. Community Engagement Results

2.1 Request/order from the government

Please indicate any requests and/or orders sent from the government if any.

Request and/or order name	
The government name	
Date	
Request and/or order summary	
Countermeasures	

2.2 Stakeholder meeting

Please report on stakeholder meetings held by contractors to the local people during this monitoring period.

Please attach details and meeting minutes in Appendix X.

	Package 1	Package 2	Package 3	Package 4
Purpose of the Meeting				
Number of SHM held <i>e.g., 3 times</i>				
Date <i>e.g., 1st dd/mm/yy</i>				
No. of participants <i>e.g., 1st 20 ppl</i>				

2.3 Grievances

Please report grievances and its progress summary. Please attach detailed logs in Appendix X.

	Package 1	Package 2	Package 3	Package 4
Number of grievances received during the monitoring period				
Number of grievances closed				
Number of grievances on hold				
Number of grievances in total				

Please report highlighted grievances and its countermeasures.

(e.g. irrigation clogging, noise complaints, property damage by construction such as vibration, demonstration pursuing employments.)

Package 1

Date:	Complainant:
Detailed complains:	
Taken measures:	

Package 2

Date:	Complainant:
Detailed complains:	
Taken measures:	

Package 3

Date:	Complainant:
Detailed complains:	
Taken measures:	

Package 4

Date:	Complainant:
Detailed complains:	
Taken measures:	

B. Construction Period

1 Pollution Measures

1.1 Air quality

Please summarize air quality results. Please attach detailed results in Appendix X.

Parameter	Unit	Baseline (Avg)	U1	U2	U3	National Std.*	International Std.** (reference)
Air Temperature	°C	-				-	-
Humidity	%					-	-
TSP	µg/m ³	13.2 (24h)				230 (24h)	-
NO ₂	µg/m ³	26.2 (1h)				200 (1h) 65 (24h) 50 (1year)	40 (1year) 200 (1h)
SO ₂	µg/m ³	29.8 (1h)				150 (1h) 75 (24h) 45 (1year)	125 (24h, Interim target-1) 50 (24h, Interim target-2) 20 (24h, guideline)
CO	g/Nm ³	3.682 (1h)				4000	
Wind Direction	degree					-	
Wind Speed	m/s					-	

*Peraturan Pemerintah Republik Indonesia No. 22/2021

**International Finance Corporation, [General Environmental, Health, and Safety \(EHS\) Guidelines](#), 2007

Please clarify the reason of exceedance and its countermeasures if any.

Sampling Spot	
Reason	
Countermeasure	

Add tables as needed

1.2 Water Quality (Surface)

Please summarize surface water quality results. Please attach detailed results in Appendix X.

Parameter	Unit	Baseline (Avg)	AP1	AP2	AP3	Indonesian Std.* (Class 2)	Japan Std.** (reference)
Sampling Date							
Temperature	oC	29					
pH	-	6.2				6.5 – 8.5	6.5-8.5
TDS	mg/L	147.2				1000	
TSS (Suspended Residue)	mg/L	329.2				40	-
BOD	mg/L	14.4				3	10
COD	mg/L	44.2				25	

* Peraturan Pemerintah Republik Indonesia No. 22/2021

** Environmental Quality Standards for Conservation of the Living Environment (River, Industry water class 3 and conservation of environment)

Please clarify the reason of exceedance and its countermeasures if any.

Sampling Spot	
Reason	
Countermeasure	

Add tables as needed

1.3 Water Quality (Groundwater)

Please summarize groundwater quality results. Please attach detailed results in Appendix X.

Parameter	Unit	Baseline (Avg)	AS1	AS2	AS3	Indonesian Std.* (Class 1)	Japan Std.** (reference)
Sampling Date							
TDS	mg/L	539.25				1,000	
Temperature	°C	27.5				+3	
pH	-	6.58				6.5 – 8.5	6.5 – 8.5
Total Coliform	MPN/100ml	13.25				1,000	≤5,000

* Peraturan Pemerintah Republik Indonesia No. 22/2021

** [Environmental Quality Standards for Conservation of the Living Environment \(River, Water supply class 2\)](#)

Please clarify the reason of exceedance and its countermeasures if any.

Sampling Spot	
Reason	
Countermeasure	

Add tables as needed

1.4 Noise

Please summarize noise monitoring results. Please attach detailed results in Appendix X.

Parameter	Unit	Baseline (Avg)	U1	U2	U3	Indonesian Std.	International Std. (reference)
Sampling date							
Basecamp	dBA	51.6				Construction* 85 (8h), 88 (4h) 91 (2h), 94 (1h)	***Construction Noise 8dB(A) (7am-7pm)
Residential area	dBA	51.6				55**	Day: 55 Night: 45/ BG+3 ****

* Peraturan Perundang Ministry of Manpower No.5/2018.

**Ministry of Environment and Forestry No.48/1996

***Environmental Standard of Special Construction Noise (Law 98) / Ministry of Environment in Japan, 1968

****Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, World Health Organization (WHO), 1999

Please clarify the reason of exceedance and its countermeasures if any.

Sampling Spot	
Reason	
Countermeasure	

Add tables as needed

1.5 Waste Management

Please summarize waste management monitoring results. Please attach detailed results in Appendix X.

		Waste volume	Methods of collection	Methods of transportation	Methods of final treatment
<i>example</i>		<i>150 kg</i>	<i>Collected in trash bins and stored in TPS.</i>	<i>Picked up 3 times a week by a licensed company</i>	<i>A licensed company transported to final treatment site</i>
CP1	Domestic				
	Hazardous				
CP2	Domestic				
	Hazardous				
CP3	Domestic				
	Hazardous				
CP4	Domestic				
	Hazardous				

*The contractor complies waste management plan agreed with a supervisor consultants developed in accordance relevant laws in Indonesia

1.6 Aquatic Biota

Please summarize aquatic biota monitoring results. Please attach detailed results in Appendix X.

Phytoplankton

Species Scientific name/English name	Number of Catch				
	Baseline (avg.)	P1	P2	P3	Total
Sampling Date					
<i>..insert rows as needed</i>					
Abundance value (No. of individuals)	91.8				
Dominance index					
Diversity index	3.24				

Zooplankton

Species Scientific name/English name	Number of Catch				
	Baseline (Total)	P1	P2	P3	Total
Sampling Date					
<i>..insert rows as needed</i>					
Abundance value (No. of individuals)	25.8				
Dominance index					
Diversity index	1.27				

Benthos

Species Scientific name/English name	Number of Catch				
	Baseline (Total)	B1	B2	B3	Total
Sampling Date					
<i>..insert rows as needed</i>					
Abundance value (No. of individuals)	1,193.4				
Dominance index					
Diversity index	1.65				

1.7 Tree

Parameter	Package 1	Package 2	Package 3	Package 4
Number of trees cut in this monitoring period				
Cumulative number of cut trees				
Number of trees planted				
Places where planted				
Species planted				
Growing condition				

C. Operation Period

2. Pollution Measure

- 2.1 Air quality

Please summarize air quality results. Please attach detailed results in Appendix X.

Parameter	Unit	Baseline (Avg)	U1	U2	U3	National Std.*	International Std.** (reference)
Air Temperature	°C	-				-	-
Humidity	%					-	-
TSP	µg/m3	13.2 (24h)				230 (24h)	-
NO2	µg/m3	26.2 (1h)				200 (1h) 65 (24h) 50 (1year)	40 (1year) 200 (1h)
SO2	µg/m3	29.8 (1h)				150 (1h) 75 (24h) 45 (1year)	125 (24h, Interim target-1) 50 (24h, Interim target-2) 20 (24h, guideline)
Wind Direction	degree					-	
Wind Speed	m/s					-	

*Peraturan Pemerintah Republik Indonesia No. 22/2021

**International Finance Corporation, [General Environmental, Health, and Safety \(EHS\) Guidelines](#), 2007

Please clarify the reason of exceedance and its countermeasures if any.

Sampling Spot	
Reason	
Countermeasure	

Add tables as needed

2.2 Water Quality (Surface)

Please summarize surface water quality results. Please attach detailed results in Appendix X.

Parameter	Unit	Baseline (Avg)	AP1	AP2	AP3	Indonesian Std.* (Class 2)	Japan Std.** (reference)
Sampling Date							
Temperature	oC	29					
pH	-	6.2				6.5 – 8.5	6.5-8.5
TDS	mg/L	147.2				1000	
TSS (Suspended Residue)	mg/L	329.2				40	-
BOD	mg/L	14.4				3	10
COD	mg/L	44.2				25	

* Peraturan Pemerintah Republik Indonesia No. 22/2021

** Environmental Quality Standards for Conservation of the Living Environment (River, Industry water class 3 and conservation of environment)

Please clarify the reason of exceedance and its countermeasures if any.

Sampling Spot	
Reason	
Countermeasure	

Add tables as needed

2.3 Noise

Please summarize noise monitoring results. Please attach detailed results in Appendix X.

Parameter	Unit	Baseline (Avg)	U1	U2	U3	Indonesian Std.	International Std. (reference)
Sampling date							
Residential area	dB(A)	51.6				Operation** 55	Operation**** Day: 55 Night: 45/ BG+3

* Peraturan Perundang Ministry of Manpower No.5/2018

** Ministry of Environment and Forestry No.48/1996

*** Environmental Standard of Special Construction Noise (Law 98) / Ministry of Environment in Japan, 1968

**** Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, World Health Organization (WHO), 1999

Please clarify the reason of exceedance and its countermeasures if any.

Sampling Spot	
Reason	
Countermeasure	

Add tables as needed

2.4 Waste Management

Please summarize waste management monitoring results. Please attach detailed results in Appendix X.

		Waste volume	Methods of collection	Methods of transportation	Methods of final treatment
<i>example</i>		<i>150 kg</i>	<i>Collected in trash bins and stored in TPS.</i>	<i>Picked up 3 times a week by a licensed company</i>	<i>A licensed company transported to final treatment site</i>
CP1	Domestic				
	Hazardous				
CP2	Domestic				
	Hazardous				
CP3	Domestic				
	Hazardous				
CP4	Domestic				
	Hazardous				

*The contractor complies waste management plan agreed with a supervisor consultants developed in accordance relevant laws in Indonesia

Appendix II Monitoring Form for Land Acquisition and LRP

Following monitoring form is drafted in order to make a report to JICA by the project executor. Social monitoring items are proposed to confirm LARAP and LRP is appropriately implemented.

1. Progress of Land Acquisition

1.1 Progress in Area (m2)

[By village]

Sub-District	Village	(1) Area to be acquired (m2) <small>(LARAP, May 2022)</small>	(2) Acquired area in this quarter (m2)	(3) Cumulative area already acquired (m2)	(3)/(1) Progress (%)
CIASEM	JATIBARU	151,904.904			
CIKAUM	MEKARSARI	212,685.876			
	PASIRMUNCANG	56,220.548			
CIPEUNDEUY	KOSAR	188,541.991			
	SAWANGAN	502,927.366			
PABUARAN	KARANGHEGAR	197,597.595			
PAMANUKAN	BONGAS	106,570.922			
	RANCAHILIR	135,473.184			
	RANCASARI	38,950.687			
PATOKBEUSI	RANCABANGO	41,198.041			
PURWADADI	PANYINGKIRAN	128,312.097			
	PASIRBUNGUR	373,546.293			
	RANCAMAHI	104,159.375			
PUSAKAJAYA	PUSAKAJAYA	3,352.413			
PUSAKANAG ARA	KOTASARI	256,033.736			
TAMBAKDAH AN	GARDUMUKTI	81,718.945			
	KERTAJAYA	232,968.619			
	MARIUK	174,530.647			
	TANJUNGRASA	254,366.056			
	WANAJAYA	159,322.191			
	TOTAL	3,400,381.488			

[By ownership type]

Ownership type	(1) Area to be acquired (m2) <small>(LARAP, May 2022)</small>	(2) Acquired area in this quarter (m2)	(3) Cumulative area already acquired (m2)	(3)/(1) Progress (%)
State owned land	246,315.552			
Individual owned land	2,476,484.292			
Private company owned land	318,104.771			
Plantation land	353,664.465			
Waqf/Foundation owned	5,812.408			
Total	3,400,381.488			

1.2 Progress in Number of Plots

[By village]

Sub-District	Village	(1) Number of plots to be acquired (LARAP May2022)	(2) Acquired number of plots in this quarter	(3) Cumulative number of plots already acquired	(3)/(1) Progress (%)
CIASEM	JATIBARU	98			
CIKAUM	MEKARSARI	240			
	PASIRMUNCANG	40			
CIPEUNDEUY	KOSAR	69			
	SAWANGAN	409			
PABUARAN	KARANGHEGAR	144			
PAMANUKAN	BONGAS	127			
	RANCAHILIR	135			
	RANCASARI	27			
PATOKBEUSI	RANCABANGO	37			
PURWADADI	PANYINGKIRAN	121			
	PASIRBUNGUR	195			
	RANCAMAHI	39			
PUSAKAJAYA	PUSAKAJAYA	5			
PUSAKANAG ARA	KOTASARI	192			
TAMBAKDAH AN	GARDUMUKTI	37			
	KERTAJAYA	178			
	MARIUK	108			
	TANJUNGRASA	111			
	WANAJAYA	63			
	Total	2375			

[By ownership type]

Ownership type	(1) Number of plots to be acquired (LARAP May2022)	(2) Acquired number of plots in this quarter	(3) Cumulative number of plots already acquired	(3)/(1) Progress (%)
State owned land	382			
Individual owned land	1903			
Private company owned land	77			
Waqf/Foundation owned land	13			
Total	2375			

2. Progress of Compensation Payment

Sub-District	Village	(1)			(2)			(2)/(1) Progress (%)		
		Number of plots to be paid (LARAP May2022)	Number of tenants to be paid in plot basis	Number of workers to be paid in plot basis	Number of landowners already paid	Number of tenants already paid	Number of workers already paid	Land owners	Tenants	Workers
CIASEM	JATIBARU	98								
CIKAUM	MEKARSARI	240								
	PASIRMUNCANG	40								
CIPEUNDEUY	KOSAR	69								
	SAWANGAN	409								
PABUARAN	KARANGHEGAR	144								
PAMANUKAN	BONGAS	127								
	RANCAHILIR	135								
	RANCASARI	27								
PATOKBEUSI	RANCABANGO	37								
PURWADADI	PANYINGKIRAN	121								
	PASIRBUNGUR	195								
	RANCAMAHI	39								
PUSAKAJAYA	PUSAKAJAYA	5								
PUSAKANAGARA	KOTASARI	192								
TAMBAKDAHAN	GARDUMUKTI	37								
	KERTAJAYA	178								
	MARIUK	108								
	TANJUNGRASA	111								
	WANAJAYA	63								
	TOTAL	2375								

3. Progress of House Relocation

Sub-district	Village	(1) Total number of households whose houses to be relocated (LARAP, May 2022)			(2) Number of households relocated in this quarter (survey date: xx-xx/xx/20xx)			(3) Cumulative number of households already relocated			(3)/(1) Progress (%)		
		Owners	Tenants	Total	Owner	Tenant	Total	Owner	Tenant	Total	Owner	Tenant	Total
Cikaum	Mekarsari	105	2	107									
Cipeundeuy	Kosar	18	-	18									
	Sawangan	170	-	170									
Pamanukan	Bongas	16	-	16									
	Rancahilir	3	-	3									
	Rancasari	-	5	5									
	Purwadadi	9	8	17									
	Rancamahi	1	5	6									
Pusakajaya	Pusakajaya	1	-	1									
Pusakanagara	Kotasari	51	-	51									
Tambakdahan	Kertajaya	25	46	71									
	Tanjungrasa	19	-	19									
Total		418	66	484									

4. Livelihood Condition

4.1 Monthly Income

Monthly income range (Rp.)	Baseline (June 2022)		Monitoring results for sampled household Survey date: xx-xx/xx/20xx	
	Male	Female	Male	Female
≤2,000,000	347 (18.4%)	128 (19.9%)		
>2,000,000-4,000,000	1085 (57.4%)	288 (44.9%)		
>4,000,000-6,000,000	272 (14.4%)	128 (19.9%)		
>6,000,000-8,000,000	69 (3.6%)	29 (4.5%)		
>8,000,000-10,000,000	50 (2.6%)	30 (4.7%)		
>10,000,000	68 (3.6%)	39 (6.1%)		
Total	1891 (100%)	642 (100%)		

4.2 Main Means of Livelihood

Means of livelihood	Baseline (June 2022)		Monitoring results for sampled household Survey date: xx-xx/xx/20xx	
	Male	Female	Male	Female
Agriculture with farm/plantation land	668 (35.3%)	396 (61.7%)		
Farm/plantation workers	800 (42.3%)	72 (11.2%)		
Business owner/trader	157 (8.3%)	94 (14.6%)		
Collectors/middleman	4 (0.2%)	2 (0.3%)		
Private employee	101 (5.3%)	36 (5.6%)		
Civil servant	14 (0.7%)	11 (1.7%)		
Army/police	4 (0.2%)	-		
Other jobs	138 (7.3%)	31 (4.8%)		
Retired	12 (0.6%)	1 (0.2%)		
Not working/ looking for works	19 (1.0%)	10 (1.6%)		
Total	1891 (100%)	642 (100%)		

5. Record of Implementation of Livelihood Restoration Program

Program name	Batch#	Implementation date	Number of Participants		
			Male	Female	Total
Total number of participants in this quarter					
Cumulative total participants					
Number of eligible people willing to participate			1,855	625	2,480
Progress (%): Cumulative/Number of eligible people					

6. Grievance Handling Records

Category	Affected asset inventory	Compensation	Livelihood Restoration Program	()
Number of grievances received during this quarter				
Cumulative number of grievances closed in total				
Cumulative number of grievances on hold in total				
Cumulative number of grievances in total				

Highlighted grievances and its countermeasures.

Date:	Complainant:
Category: <input type="checkbox"/> Affected asset inventory <input type="checkbox"/> Compensation <input type="checkbox"/> LRP <input type="checkbox"/> Others	
Detailed complains:	
Taken measures:	